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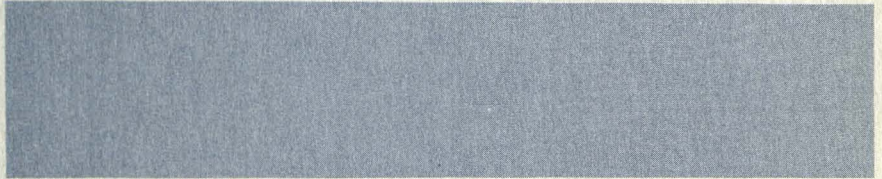
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Empirical Yield Tables for Minnesota

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EMPIRICAL YIELD TABLES FOR MINNESOTA

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Empirical yield tables are useful to forest resource managers, timber managers, wild-life managers, and multi-resource managers who are interested in estimates of current commercial forest species composition and volume or in rough, short-term projections of future conditions. Examples showing each of these uses are presented in this paper. A similar set of tables is presented in "Empirical Yield Tables for Wisconsin" (Essex and Hahn 1976) and can be used by persons interested in comparisons between States. In addition we are aware of unpublished empirical yield tables for Missouri and Iowa based on the most recent forest surveys of those States.

Presented here are yield tables compiled from data gathered on 8,807 commercial forest land plots established during the 1977 inventory of Minnesota's four Forest Survey Units (fig. 1). Tables for the entire State and for each Survey Unit were compiled by forest type and site index class. Only tables having sufficient data, usually 3 or 4 plots in each of three adjacent age classes, are presented; we feel that less than this amount of information would not be useful.

The tables give the estimated merchantable cubic foot volume yield per acre from growing-stock trees and the average basal area per acre of all live trees by stand age class for the 14 forest types defined in the Appendix. These tables provide a detailed picture of stand composition as measured by growing-stock volume.

The tables were constructed by classifying the commercial forest land plots measured in the 1977 inventory by forest type, stand age, and site index class. Then the per-acre merchantable cubic foot volume was tabulated by species group. The merchantable volume standards used are minimum 5-inch d.b.h. to a 4-inch top diameter. Individual tree volumes were computed using a formula developed from "Composite volume tables for timber and their application in the Lake

States" (Gevorkiantz and Olsen 1955, Raile 1981). A full explanation of the survey procedures and definitions can be obtained from "Forest statistics for Minnesota 1977" (Jakes 1980).

The tables can be used in several ways:

1. They can be used to estimate future timber yield, in the manner of normal yield tables, where it is assumed that the volume shown in one age class will increase in 10 years to the volume shown in the next older age class. For example, from table 9 stands aged 51-60 years average 2,025 cubic feet per acre. If you have a stand of red pine 41-50 years old, you could expect that in 10 years it would approximate this volume.

2. These tables, in conjunction with other forest inventory publications, can also be used to compare volume estimates for progressive rotation ages. For example, the aspen type occupied 5,302,000 acres in Minnesota in 1977 (Jakes 1980). For a selected rotation and an equal number of acres harvested each year the annual harvest volume estimates can be derived as follows using the yields shown in table 50:

Rotation age (years)	Area harvested ¹ (thousand acres)		Merchantable volume/acre ² (cubic feet)		Annual harvest volume/year (million cubic feet)
35	151.5	×	930	=	140.9
45	117.8	×	1,122	=	132.2
55	96.4	×	1,201	=	115.8

In addition these volumes can be broken down by species group. (See Appendix for a detailed species

$$15,302,000 \text{ acres}/35 \text{ years} = 151,500 \text{ acres/year.}$$

²From table 50.

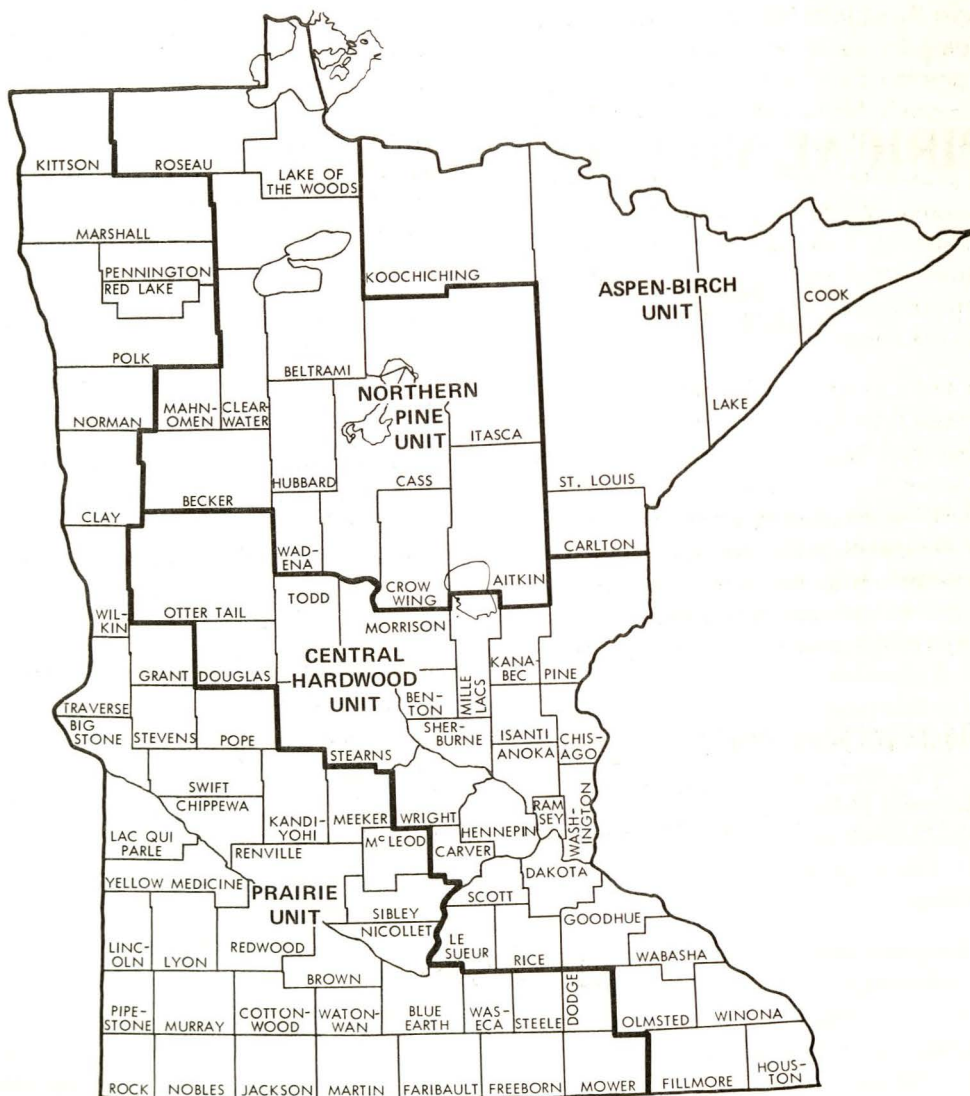


Figure 1. — Forest survey units in Minnesota.

breakdown of the species group.) In the above three rotations for example:

Rotation age (years)	Harvest volume	Softwood ³ ----- (million cubic feet) -----	Hardwood
35	140.9	15.9	125.0
45	132.2	15.1	117.1
55	115.8	14.7	101.1

³From table 50. $105 \text{ cubic feet/ac} \times 51,500 \text{ acres} = 15,900,000 \text{ cubic feet.}$

According to this analysis, both the greatest total yield and the greatest softwood yield would be attained by using a 35-year rotation for the aspen type, although more acres would have to be harvested each year to obtain that volume. Currently, more than half the plots in the aspen type are in stands older than 35 years. Therefore, some volume from older plots would have to be harvested to reach a 35-year rotation.

3. Finally the basal area values in these tables allow a comparison between stand density and stand age that can be used to determine whether existing stands are fully stocked. For example, in 1977 there were 923 acres of aspen 51 to 60 years old in the 61- to 70-site index class in Minnesota (Jakes 1980). Yields in these stands (all species) averaged 1,214 cubic feet

per acre, and basal areas (growing stock and cull combined) averaged 94 square feet (table 46). Thus, the ratio of volume to basal area was 12.9 to 1. Schlaegel (1971) predicted that such a ratio for fully stocked stands of aspen in Minnesota would be 26 to 1. If we view Schlaegel's prediction as an index of stand potential we can generalize that similar aspen sites that are fully stocked could be expected to yield roughly twice as much as these stands are producing now. The comparison can only be approximate as Schlaegel used different standards of merchantability in computing his volumes.

The volumes shown in these tables were obtained from plots that ranged from stands in an undisturbed state to stands that had been cut repeatedly. Thus standard errors of mean volume are given in the tables to indicate this variation. Sampling errors in percent can be determined by dividing the standard error by the mean volume; for example, the sampling error for jack pine in the 41- to 50-year age class all sites combined (table 5) is + 5.7 percent $((73/1,272) \times 100)$.

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APPENDIX

FOREST TYPE DEFINITIONS

A classification of forest land based upon the species forming a plurality of live-tree stocking. Major forest types in Minnesota are:

Jack pine. — Forests in which jack pine comprises a plurality of the stocking. (Common associates include eastern white pine, red pine, aspen, birch, and maple.)

Red pine. — Forests in which red pine comprises a plurality of the stocking. (Common associates include eastern white pine, jack pine, aspen, birch, and maple.)

White pine. — Forests in which eastern white pine comprises a plurality of the stocking. (Common associates include red pine, jack pine, aspen, birch, and maple.)

Balsam fir. — Forests in which balsam fir comprises a plurality of stocking. (Common associates include white spruce, aspen, maple, birch, northern white-cedar, and tamarack.)

White spruce. — Forests in which white spruce comprises a plurality of the stocking. (Common associates include balsam fir, aspen, maple, birch, northern white-cedar, tamarack.)

Black spruce. — Forests in which black spruce comprises a plurality of the stocking. (Common associates include tamarack and northern white-cedar.)

Northern white-cedar. — Forests in which northern white-cedar comprises a plurality of the stocking. (Common associates include tamarack and black spruce.)

Tamarack. — Forests in which tamarack comprises a plurality of the stocking. (Common associates include black spruce and northern white-cedar.)

Oak. — Forests in which northern red oak, white oak, or bur oak, singly or in combination, comprise a plurality of the stocking. (Common associates include elm, maple, and aspen.)

Elm-ash-cottonwood. — Forests in which lowland elm, ash, cottonwood and red maple, singly or in combination, comprise a plurality of the stocking. (Common associates include basswood and balsam poplar.)

Maple-basswood. — Forests in which sugar maple, basswood, yellow birch, upland American elm, and red maple, singly or in combination, comprise a plurality of the stocking. (Common associates include white pine, and elm.)

Aspen. — Forests in which quaking aspen or bigtooth aspen, singly or in combination, comprise a plurality of the stocking. (Common associates include balsam poplar, balsam fir, and paper birch.)

Paper birch. — Forests in which paper birch comprises a plurality of the stocking. (Common associates include maple, aspen, and balsam fir.)

Balsam poplar. — Forests in which balsam poplar comprises a plurality of the stocking. (Common associates include aspen, elm, and ash.)

PRINCIPAL TREE SPECIES GROUPS IN MINNESOTA⁴

Softwoods:

Eastern white pine	<i>Pinus strobus</i>
Red pine	<i>Pinus resinosa</i>
Jack pine	<i>Pinus banksiana</i>
White spruce	<i>Picea glauca</i>
Black spruce	<i>Picea mariana</i>
Balsam fir	<i>Abies balsamea</i>

⁴The common and scientific names are based on: Little, Elbert L., Jr. 1953. Check list of Native and Naturalized Trees of the United States (including Alaska). U.S. Department of Agriculture, Agriculture Handbook 41, 472 p.

Tamarack
Northern white-cedar
Other softwoods:
Eastern redcedar

Larix laricina
Thuja occidentalis
Juniperus virginiana

Hardwoods:

White oaks:
White oak
Bur oak
Select red oaks:
Northern red oak
Other red oak
Yellow birch
Hard maples:
Blackmaple
Sugar maple

Quercus alba
Quercus macrocarpa
Quercus rubra
Quercus elipsoidalis
Betula alleghaniensis
Acer nigrum
Acer saccharum

Soft maples:
Red maple
Silver maple

Acer rubrum
Acer saccharinum

Ashes:

Black ash
Green ash
Balsam poplar
Paper birch
Bigtooth aspen
Quaking aspen
Basswood

Fraxinus nigra
Fraxinus pennsylvanica
Populus balsamifera
Betula papyrifera
Populus grandidentata
Populus tremuloides
Tilia americana

Elms:

American elm
Slippery elm
Rock elm

Ulmus americana
Ulmus rubra
Ulmus thomassii

Select hardwoods:

Butternut
Black walnut
Black cherry

Juglans cinerea
Juglans nigra
Prunus serotina

Other hardwoods:

Boxelder
Eastern cottonwood
Populus deltoides
Black willow
River birch
Hackberry

Acer negundo
Salix nigra
Betula nigra
Celtis occidentalis

Table 1.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Jack pine forest type - Site index class 0-50

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	19	0	8	0	0	66	2	6	0	0	209	0	0
Red pine	34	26	94	0	59	45	43	0	0	65	71	0	0
Jack pine	435	87	0	129	734	407	631	553	515	639	335	503	0
White spruce	1	0	0	0	0	0	0	0	0	0	0	29	0
Black spruce	25	0	0	0	0	0	0	23	0	457	57	272	0
Balsam fir	5	0	0	0	0	0	0	19	0	77	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	518	113	102	129	793	518	676	601	515	1,238	672	804	0
Hardwoods:													
Select white oaks	2	0	0	0	0	9	0	0	0	0	0	0	0
Select red oaks	13	0	0	0	0	68	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	2	0	0	0	0	0	10	0	0	0	0	0	0
Ash	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam poplar	1	0	0	0	0	4	0	0	0	0	0	0	0
Paper birch	25	0	30	0	0	60	11	15	0	142	0	88	0
Bigtooth aspen	1	0	0	0	0	4	0	0	0	0	0	0	0
Quaking aspen	38	66	9	11	7	40	21	91	0	49	0	55	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	82	66	38	11	7	185	43	106	0	191	0	143	0
Total all species	601	179	140	140	800	702	718	707	515	1,428	672	947	0
Number of plots	51	4	4	4	4	10	10	9	2	1	1	2	0
Standard error ^{3/}	63	67	75	58	305	114	142	162	50	R	R	163	0
Average basal area	68	33	46	56	91	69	82	65	54	128	60	90	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 2.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Jack pine forest type - Site index class 51-60

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	3	0	0	0	0	7	0	4	13	0	0	0	0
Red pine	53	35	12	0	61	42	62	111	102	0	0	0	0
Jack pine	985	1,101	153	373	710	814	1,318	1,455	1,349	1,479	651	0	0
White spruce	6	0	0	0	0	13	8	0	29	0	0	0	0
Black spruce	30	0	0	6	0	23	7	120	0	135	314	0	0
Balsam fir	8	0	0	0	4	10	10	5	11	71	0	0	0
Tamarack	1	0	0	0	0	3	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,086	1,136	165	379	774	911	1,406	1,695	1,505	1,684	964	0	0
Hardwoods:													
Select white oaks	2	0	0	0	2	0	8	2	0	0	0	0	0
Select red oaks	3	0	0	0	2	3	2	4	0	0	78	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	2	0	0	0	0	0	7	0	0	0	0	0	0
Ash	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam poplar	1	0	0	0	0	1	3	0	0	0	0	0	0
Paper birch	12	0	7	0	4	4	12	10	15	50	302	0	0
Bigtooth aspen	1	0	0	0	0	0	0	12	0	0	0	0	0
Quaking aspen	71	0	0	21	43	101	42	221	13	0	0	0	0
Basswood	0	0	0	0	0	0	0	3	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	93	0	7	21	51	109	73	252	28	50	380	0	0
Total all species	1,179	1,136	172	400	826	1,020	1,479	1,947	1,533	1,734	1,344	0	0
Number of plots	125	8	5	10	15	33	31	15	4	2	2	0	0
Standard error	79	407	60	72	58	96	158	346	273	158	217	0	0
Average basal area	83	58	30	62	83	80	94	103	102	122	81	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.

^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 3.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Jack pine forest type - Site index class 61-70

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	4	0	0	5	0	10	0	0	0	0	0	0	0
Red pine	71	0	45	67	97	60	85	49	0	0	0	0	0
Jack pine	1,015	273	70	559	875	1,226	1,163	1,548	0	968	0	0	0
White spruce	5	0	0	0	14	4	3	0	0	0	0	0	0
Black spruce	25	0	0	8	20	30	48	0	0	0	0	0	0
Balsam fir	17	0	65	49	28	5	8	0	0	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,137	273	180	687	1,034	1,335	1,308	1,597	0	968	0	0	0
Hardwoods													
Select white oaks	3	0	0	0	0	8	3	0	0	0	0	0	0
Select red oaks	6	40	0	24	0	0	10	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	1	0	0	0	0	2	0	0	0	0	0	0	0
Balsam poplar	2	0	0	0	0	0	8	0	0	0	0	0	0
Paper birch	32	12	119	8	21	27	56	42	0	0	0	0	0
Bigtooth aspen	12	0	0	0	12	9	27	0	0	0	0	0	0
Quaking aspen	64	33	0	21	43	58	102	25	0	713	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	1	0	0	1	0	0	3	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	2	0	0	0	0	0	8	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	122	86	119	54	76	103	216	67	0	713	0	0	0
Total all species	1,259	359	298	741	1,110	1,438	1,524	1,664	0	1,681	0	0	0
Number of plots	89	3	2	10	20	28	20	5	0	1	0	0	0
Standard error ^{3/}	63	156	120	130	88	100	133	281	0	R	0	0	0
Average basal area	89	40	45	84	88	95	94	103	0	110	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 4.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Jack pine forest type - Site index class 71-80

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	3	0	0		7	0	0	0	0	0	0	0	0
Red pine	113	0	0	101	65	206	42	114	0	0	0	0	0
Jack pine	1,074	561	114	832	769	1,477	943	1,970	0	0	0	0	0
White spruce	3	0	0	0	6	4	0	0	0	0	0	0	0
Black spruce	53	0	0	0	89	62	0	0	0	0	0	0	0
Balsam fir	19	0	0	17	3	17	0	140	0	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,265	561	114	950	937	1,766	985	2,224	0	0	0	0	0
Hardwoods:													
Select white oaks	3	0	0	0	7	0	0	0	0	0	0	0	0
Select red oaks	8	0	0	31	14	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	1	0	0	0	0	2	0	0	0	0	0	0	0
Ash	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam poplar	4	0	0	0	0	0	0	46	0	0	0	0	0
Paper birch	30	0	0	41	48	17	0	39	0	0	0	0	0
Bigtooth aspen	17	0	0	0	46	0	0	0	0	0	0	0	0
Quaking aspen	121	0	0	0	96	208	164	116	0	0	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	183	0	0	72	212	227	164	201	0	0	0	0	0
Total all species	1,447	561	114	1,022	1,149	1,993	1,150	2,424	0	0	0	0	0
Number of plots	39	1	2	4	14	13	2	3	0	0	0	0	0
Standard error ^{3/}	139	R	114	239	164	195	148	789	0	0	0	0	0
Average basal area	95	75	68	86	85	109	77	132	0	0	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 5.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Jack pine forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	6	0	2	2	3	14	0	4	9	0	70	0	0
Red pine	64	24	40	41	79	74	66	72	68	16	24	0	0
Jack pine	910	659	87	489	799	1,005	1,148	1,235	1,071	1,141	545	503	0
White spruce	5	0	0	0	8	7	5	0	19	0	0	29	0
Black spruce	30	0	0	5	29	28	18	61	0	182	228	272	0
Balsam fir	12	0	10	23	12	8	8	21	8	55	0	0	0
Tamarack	0	0	0	0	0	1	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,027	682	140	559	929	1,138	1,246	1,392	1,175	1,393	867	804	0
Hardwoods:													
Select white oaks	2	0	0	0	2	4	5	1	0	0	0	0	0
Select red oaks	6	8	0	12	4	9	4	2	0	0	52	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	1	0	0	0	1	0	5	0	0	0	0	0	0
Ash	0	0	0	0	0	1	0	0	0	0	0	0	0
Balsam poplar	2	0	0	0	0	1	4	4	0	0	0	0	0
Paper birch	23	2	30	8	29	20	25	19	10	60	201	88	0
Bigtooth aspen	6	0	0	0	17	4	9	6	0	0	0	0	0
Quaking aspen	73	23	3	15	77	96	61	140	9	190	0	55	0
Basswood	0	0	0	0	0	0	0	1	0	0	0	0	0
Elm	0	0	0	0	0	0	1	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	1	0	0	0	0	0	3	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	115	33	33	36	129	134	117	172	19	251	253	143	0
Total all species	1,142	715	173	595	1,059	1,272	1,362	1,564	1,193	1,644	1,120	947	0
Number of plots	311	16	13	30	57	84	63	33	6	4	3	2	0
Standard error	44	228	39	77	65	73	97	206	276	98	257	163	0
Average basal area	84	49	43	73	86	88	91	94	86	120	74	90	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.Minnesota State Total
Jack Pine
Site Index All Classes

Table 6.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Red pine forest type - Site index class 51-60

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	142	0	0	0	28	199	102	58	163	342	304	0	0
Red pine	1,086	263	80	122	870	904	679	1,122	1,935	1,125	1,249	0	0
Jack pine	111	0	30	0	364	170	353	111	42	143	0	0	0
White spruce	13	0	0	0	36	0	0	0	27	0	74	0	0
Black spruce	8	0	0	0	0	0	0	62	6	0	0	0	0
Balsam fir	44	0	12	0	0	102	46	23	19	0	362	0	0
Tamarack	4	0	0	0	0	0	0	0	16	0	0	0	0
Northern white-cedar	4	0	0	0	0	0	0	17	9	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,412	263	122	122	1,298	1,375	1,181	1,394	2,217	1,609	1,988	0	0
Hardwoods:													
Select white oaks	4	0	0	0	13	0	0	9	0	20	0	0	0
Select red oaks	10	0	0	0	16	39	0	0	6	12	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	1	0	0	0	14	0	0	0	0	0	0	0	0
Ash	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam poplar	1	0	0	0	0	0	0	0	3	0	0	0	0
Paper birch	72	0	0	0	31	61	0	0	199	49	36	0	0
Bigtooth aspen	14	0	0	0	0	0	0	0	50	0	0	0	0
Quaking aspen	104	51	0	0	51	113	69	94	160	193	23	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	206	51	0	0	124	213	69	102	419	274	59	0	0
Total all species	1,618	314	122	122	1,422	1,588	1,250	1,496	2,636	1,883	2,048	0	0
Number of plots	41	3	4	1	3	6	2	4	11	5	2	0	0
Standard error ^{3/}	182	314	70	R	446	172	443	397	401	357	124	0	0
Average basal area	108	33	28	86	124	135	98	93	140	102	172	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 7.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Red pine forest type - Site index class 61-70

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	111	0	0	0	36	108	288	33	750	161	211	0	0
Red pine	1,168	196	45	361	1,116	894	2,108	1,703	2,854	2,131	1,390	0	0
Jack pine	75	165	0	33	0	296	186	0	0	82	0	0	0
White spruce	37	0	0	61	120	0	17	0	0	0	0	0	0
Black spruce	12	0	0	0	27	41	0	0	0	89	0	0	0
Balsam fir	39	0	0	0	113	116	0	14	0	0	122	0	0
Tamarack	3	0	0	17	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	12	0	0	77	0	0	0	0	0	0	0	0	0
Total	1,457	361	45	549	1,412	1,455	2,599	1,751	3,603	2,464	1,723	0	0
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	4	0	0	0	0	0	24	0	0	0	0	0	0
Balsam poplar	16	0	0	0	0	140	27	0	0	0	0	0	0
Paper birch	16	0	0	0	38	0	31	0	0	0	83	0	0
Bigtooth aspen	8	0	0	0	12	0	0	0	0	0	131	0	0
Quaking aspen	89	0	0	27	34	152	247	14	205	396	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	1	0	0	0	0	0	8	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	3	0	0	0	0	0	0	0	85	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	136	0	0	27	85	292	337	14	291	396	214	0	0
Total all species	1,593	361	45	576	1,497	1,748	2,936	1,765	3,894	2,860	1,937	0	0
Number of plots	25	2	2	4	5	2	4	3	1	1	1	0	0
Standard error ^{3/}	253	361	45	284	438	61	579	708	R	R	R	0	0
Average basal area	98	29	46	62	106	113	155	94	154	146	109	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.Minnesota State Total
Red Pine
Site Index 61-70

Table 8.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Red pine forest type - Site index class 71-80

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	108	0	0	0	0	173	0	0	532	0	0	0	0
Red pine	1,160	0	929	860	1,408	1,526	588	0	1,387	0	0	0	0
Jack pine	176	0	0	61	440	393	0	0	0	0	0	0	0
White spruce	26	0	0	21	0	29	215	0	0	0	0	0	0
Black spruce	13	0	0	58	0	0	0	0	0	0	0	0	0
Balsam fir	19	0	0	0	0	30	62	0	62	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,502	0	929	999	1,849	2,152	865	0	1,980	0	0	0	0
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	24	0	78	0	33	0	0	0	26	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam poplar	0	0	0	0	0	0	0	0	0	0	0	0	0
Paper birch	146	0	39	0	316	22	0	0	415	0	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	130	0	0	82	177	0	320	0	296	0	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	300	0	118	82	526	22	320	0	737	0	0	0	0
Total all species	1,802	0	1,046	1,082	2,374	2,174	1,185	0	2,717	0	0	0	0
Number of plots	13	0	2	3	3	2	1	0	2	0	0	0	0
Standard error ^{3/}	245	0	811	271	487	126	R	0	226	0	0	0	0
Average basal area	114	0	115	112	121	122	56	0	124	0	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 9.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Red pine forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	118	0	0	0	24	143	170	38	268	275	220	116	0
Red pine	1,036	197	283	518	1,129	877	1,375	995	1,978	1,172	966	691	0
Jack pine	104	70	15	39	219	228	195	68	31	114	0	0	0
White spruce	22	0	0	38	64	16	36	15	19	0	30	0	0
Black spruce	8	0	0	22	12	6	0	21	5	13	0	0	0
Balsam fir	37	0	6	0	51	99	19	11	22	0	169	92	0
Tamarack	3	0	0	8	0	0	0	0	11	0	0	0	0
Northern white-cedar	2	0	0	0	0	0	0	6	6	0	0	0	0
Other softwoods	3	0	0	39	0	0	0	0	0	0	0	0	0
Total	1,334	267	305	664	1,500	1,369	1,795	1,154	2,341	1,573	1,385	899	0
Hardwoods:													
Select white oaks	2	0	0	0	4	0	0	3	0	14	0	0	0
Select red oaks	8	0	20	0	13	18	4	0	8	9	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	4	0	0	0	0	0	0	0	0
Ash	1	0	0	0	0	0	12	0	0	0	0	0	0
Balsam poplar	5	0	0	0	0	26	13	0	3	0	0	0	0
Paper birch	60	0	10	0	112	57	16	0	201	35	60	0	0
Bigtooth aspen	8	0	0	0	6	0	0	0	37	0	26	0	0
Quaking aspen	92	26	0	44	78	82	181	41	171	195	9	212	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	4	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	1	0	0	0	0	0	0	0	6	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	178	26	29	44	216	182	230	44	425	252	95	212	0
Total all species	1,512	292	334	709	1,716	1,551	2,025	1,197	2,766	1,826	1,480	1,110	0
Number of plots	95	6	8	8	11	13	8	12	15	7	5	2	0
Standard error	115	174	221	200	274	142	448	247	304	358	328	43	0
Average basal area	101	27	54	84	115	119	120	80	141	99	114	100	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.Minnesota State Total
Red Pine
Site Index All Classes

Table 10.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

White pine forest type - Site index class 51-60

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	764	843	120	0	0	0	410	608	837	1,329	774	1,228	0
Red pine	113	0	163	0	0	0	158	91	0	0	14	1,350	0
Jack pine	27	0	0	0	0	0	0	125	27	0	0	0	0
White spruce	71	0	0	0	0	0	0	169	125	0	45	0	0
Black spruce	28	0	62	0	0	0	177	0	0	0	45	0	0
Balsam fir	47	0	0	0	0	0	122	0	0	71	110	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,049	843	345	0	0	0	867	993	989	1,400	987	2,578	0
Hardwoods:													
Select white oaks	3	0	0	0	0	0	0	16	0	0	0	0	0
Select red oaks	11	0	0	0	0	0	0	40	0	80	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	10	0	0	0	0	0	0	0	0	0	30	0	0
Soft maple	8	0	0	0	0	0	0	0	38	0	0	0	0
Ash	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam poplar	0	0	0	0	0	0	0	0	0	0	0	0	0
Paper birch	102	0	0	0	0	0	191	114	104	161	113	55	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	90	0	0	0	0	0	0	165	175	79	59	0	0
Basswood	20	0	0	0	0	0	0	0	0	224	22	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	245	0	0	0	0	0	191	336	318	544	223	55	0
Total all species	1,294	843	345	0	0	0	1,057	1,329	1,306	1,945	1,211	2,632	0
Number of plots	18	1	1	0	0	0	1	3	4	1	6	1	0
Standard error ^{3/}	164	R	R	0	0	0	R	356	199	R	344	R	0
Average basal area	96	120	34	0	0	0	68	81	115	98	93	153	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 11.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

White pine forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	714	843	60	0	517	634	1,119	659	748	678	725	1,071	0
Red pine	183	0	82	0	41	301	240	355	121	81	25	675	0
Jack pine	61	0	0	0	60	141	0	132	126	19	0	0	0
White spruce	70	0	0	0	249	0	0	105	83	0	128	0	0
Black spruce	18	0	31	0	0	0	59	0	0	24	40	0	0
Balsam fir	43	0	0	0	39	18	71	7	0	24	117	19	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	4	0	0	0	0	0	0	0	0	0	14	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,094	843	173	0	905	1,094	1,489	1,258	1,078	825	1,049	1,764	0
Hardwoods:													
Select white oaks	10	0	0	0	0	8	13	49	0	0	0	0	0
Select red oaks	10	0	0	0	0	0	48	26	0	27	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	4	0	0	0	0	0	0	0	0	0	16	0	0
Soft maple	9	0	0	0	0	0	26	8	25	0	9	0	0
Ash	6	0	0	0	0	0	22	24	0	0	0	0	0
Balsam poplar	1	0	0	0	0	6	0	0	0	0	0	0	0
Paper birch	78	0	0	0	158	114	113	56	69	122	82	27	0
Bigtooth aspen	1	0	0	0	0	0	0	0	0	12	0	0	0
Quaking aspen	108	0	0	0	0	7	217	123	331	65	64	0	0
Basswood	9	0	0	0	0	0	0	0	0	75	12	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	236	0	0	0	158	136	440	286	426	300	183	27	0
Total all species	1,330	843	173	0	1,063	1,230	1,928	1,544	1,504	1,125	1,232	1,792	0
Number of plots	41	1	2	0	1	5	3	7	6	3	11	2	0
Standard error ^{3/}	109	R	173	0	R	199	437	182	257	410	240	840	0
Average basal area	99	120	27	0	82	101	122	97	104	93	100	133	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.Minnesota State Total
White Pine
Site Index All Classes

Table 12.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Black spruce forest type - Site index class 0-50

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	2	0	2	1	0	3	4	1	1	6	0	0	0
Red pine	1	0	0	0	0	4	0	0	0	14	0	0	0
Jack pine	11	2	2	1	7	1	35	22	25	6	18	0	0
White spruce	4	0	1	1	4	7	6	5	10	0	13	0	0
Black spruce	328	64	132	134	164	367	411	570	541	592	653	381	918
Balsam fir	20	2	8	4	15	34	44	29	47	18	1	9	0
Tamarack	40	7	15	27	26	38	53	74	69	50	60	71	47
Northern white-cedar	11	3	0	2	9	14	12	7	29	44	0	24	28
Other softwoods	0	0	0	0	0	0	0	3	0	0	0	0	0
Total	417	78	160	169	224	468	566	710	722	729	746	485	993
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	1	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	2	0	1	0	0	0	0
Ash	2	0	0	0	0	10	0	2	4	0	1	2	0
Balsam poplar	1	0	1	0	1	1	5	0	4	2	0	0	0
Paper birch	6	0	5	1	2	6	11	9	18	15	8	0	0
Bigtooth aspen	0	0	0	1	0	0	0	1	0	1	0	0	0
Quaking aspen	22	2	22	9	15	15	68	33	33	18	15	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	4	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	33	2	28	12	18	33	85	45	60	35	24	6	0
Total all species	450	80	188	182	242	501	651	755	782	764	769	491	993
Number of plots	597	21	54	118	95	60	67	45	48	40	28	12	9
Standard error	19	30	29	17	27	63	72	72	73	84	97	75	195
Average basal area	71	29	40	53	63	77	88	89	87	94	98	72	107

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 13.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Black spruce forest type - Site index class 51-60

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	21	0	0	0	0	0	0	55	220	0	0	0	0
Red pine	6	0	0	0	0	0	0	0	92	0	0	0	0
Jack pine	28	31	46	0	0	44	102	0	0	0	0	0	0
White spruce	2	0	0	0	0	0	5	0	22	0	0	0	0
Black spruce	549	163	101	235	367	654	737	983	1,472	1,585	908	0	0
Balsam fir	35	41	14	6	32	30	64	25	95	0	136	0	0
Tamarack	30	0	36	10	52	28	0	30	140	0	0	0	0
Northern white-cedar	10	0	0	22	0	0	22	31	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	682	235	197	273	452	755	929	1,125	2,042	1,585	1,044	0	0
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	1	0	0	0	5	0	0	0	0	0	0	0	0
Ash	2	0	0	0	0	0	11	0	0	0	0	0	0
Balsam poplar	1	0	0	0	0	0	11	0	0	0	0	0	0
Paper birch	10	0	0	5	8	0	15	57	0	0	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	37	0	0	48	61	59	103	11	0	0	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	51	0	0	53	74	59	141	68	0	0	0	0	0
Total all species	733	235	197	326	526	814	1,070	1,193	2,042	1,585	1,044	0	0
Number of plots	45	4	7	7	6	5	6	5	3	1	1	0	0
Standard error ^{3/}	96	103	111	103	160	90	197	268	511	R	R	0	0
Average basal area	75	38	50	62	67	92	102	81	115	105	112	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.Minnesota State Total
Black Spruce
Site Index 51-60

Table 14.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Black spruce forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	3	0	2	1	0	2	4	7	14	6	0	0	0
Red pine	2	0	0	0	0	4	0	0	5	14	0	0	0
Jack pine	12	7	7	1	7	4	41	19	24	6	18	0	0
White spruce	4	0	1	1	4	6	8	5	11	0	13	0	0
Black spruce	344	80	131	140	176	395	434	614	595	616	662	381	918
Balsam fir	22	9	11	4	16	41	45	28	50	17	6	9	0
Tamarack	40	6	17	26	28	40	51	70	73	49	58	71	47
Northern white-cedar	11	2	0	3	8	13	13	9	28	43	0	24	28
Other softwoods	0	0	0	0	0	0	0	2	0	0	0	0	0
Total	438	103	169	175	239	504	595	753	800	750	756	485	993
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	1	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	1	0	1	0	0	0	0
Ash	2	0	0	0	0	9	1	2	4	0	1	2	0
Balsam poplar	1	0	1	0	1	1	5	0	3	2	0	0	0
Paper birch	8	0	6	2	2	9	16	14	17	14	8	0	0
Bigtooth aspen	0	0	0	1	0	0	0	1	0	1	0	0	0
Quaking aspen	25	2	19	11	21	24	72	30	31	17	14	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	4	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	36	2	26	15	25	43	95	46	56	34	23	6	0
Total all species	474	105	195	190	264	547	690	800	856	784	779	491	993
Number of plots	651	25	63	125	102	68	75	51	51	41	29	12	9
Standard error	19	31	28	17	28	59	68	71	84	84	94	75	195
Average basal area	71	30	41	54	64	78	88	88	89	95	98	72	107

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 15.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Balsam fir forest type - Site index class 0-50

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	13	0	17	7	9	7	13	18	51	0	36	0	0
Red pine	11	0	10	4	16	0	6	33	33	0	0	136	0
Jack pine	8	4	14	0	4	4	15	13	0	0	29	0	0
White spruce	20	3	15	0	12	23	17	41	51	0	103	0	0
Black spruce	58	65	38	38	34	76	64	72	88	29	84	0	0
Balsam fir	224	25	95	59	151	323	311	327	324	410	380	287	0
Tamarack	12	24	9	15	4	11	21	14	0	0	0	0	0
Northern white-cedar	53	32	17	72	69	35	66	26	146	56	55	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	400	153	215	194	299	479	513	543	693	496	688	423	0
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	3	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	2	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	2	0	0	0	0
Soft maple	0	0	0	0	0	0	0	1	0	0	0	0	0
Ash	11	0	2	10	15	8	13	25	0	0	61	42	0
Balsam poplar	9	0	3	5	14	18	11	4	4	0	0	0	0
Paper birch	60	23	14	24	68	71	87	92	63	132	89	61	0
Bigtooth aspen	1	0	0	0	3	1	1	0	0	0	0	0	0
Quaking aspen	55	7	26	20	43	58	102	91	51	0	42	52	0
Basswood	0	0	0	0	0	0	0	2	0	0	0	0	0
Elm	1	0	0	0	1	0	4	0	5	0	0	40	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	139	30	45	59	147	160	219	214	126	132	191	194	0
Total all species	538	183	260	253	446	639	732	757	819	628	878	618	0
Number of plots	244	13	31	34	26	43	45	29	14	3	5	1	0
Standard error ^{3/}	24	48	37	29	53	51	48	62	112	284	273	R	0
Average basal area	75	20	48	63	76	85	92	92	88	85	77	49	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.Minnesota State Total
Balsam Fir
Site Index 0-50

Table 16.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Balsam fir forest type - Site index class 51-60

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	21	0	20	0	0	10	32	70	0	0	0	636	0
Red pine	19	0	18	23	15	26	21	0	0	0	0	0	0
Jack pine	12	0	8	9	6	8	18	14	67	0	0	0	0
White spruce	50	75	10	0	52	38	56	117	0	356	0	284	0
Black spruce	47	0	10	63	55	50	50	36	82	0	0	103	0
Balsam fir	396	72	111	160	285	461	478	569	498	441	463	461	0
Tamarack	15	25	0	25	8	6	18	80	0	0	0	0	0
Northern white-cedar	56	9	22	30	52	38	60	44	394	0	753	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	614	180	201	310	473	637	732	931	1,041	797	1,215	1,484	0
Hardwoods:													
Select white oaks	0	0	0	0	0	1	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	1	0	8	0	0	0	0	0	0	0	0	0	0
Soft maple	4	0	0	2	0	3	6	0	19	0	0	97	0
Ash	4	22	0	0	4	2	7	0	8	0	0	0	0
Balsam poplar	31	0	3	19	20	43	26	0	150	142	0	0	0
Paper birch	105	25	58	112	96	100	137	116	72	148	238	0	0
Bigtooth aspen	2	0	0	0	0	2	6	0	0	0	0	0	0
Quaking aspen	106	0	24	95	147	126	75	175	138	0	0	230	0
Basswood	1	0	0	8	0	3	0	0	0	0	0	0	0
Elm	3	0	7	0	0	4	3	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	256	47	101	235	267	282	260	291	388	290	238	327	0
Total all species	870	227	302	545	740	919	992	1,222	1,429	1,087	1,454	1,811	0
Number of plots	186	5	14	11	24	67	43	13	5	2	1	1	0
Standard error ^{3/}	40	109	48	91	100	57	85	121	430	80	R	R	0
Average basal area	88	46	46	78	83	93	93	98	130	106	94	120	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 17.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Balsam fir forest type - Site index class 61-70

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	18	0	0	0	4	19	14	12	122	148	0	0	0
Red pine	49	20	0	0	20	10	194	12	267	0	0	0	0
Jack pine	4	16	0	0	4	7	0	0	0	0	0	0	0
White spruce	62	0	88	17	61	16	86	141	211	247	0	0	0
Black spruce	46	59	0	71	28	51	24	108	0	0	0	0	0
Balsam fir	557	266	183	333	405	652	769	905	169	143	0	0	0
Tamarack	10	0	0	0	8	14	27	0	0	0	0	0	0
Northern white-cedar	37	0	156	118	14	53	0	30	0	41	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	784	360	427	539	543	821	1,114	1,207	769	579	0	0	0
Hardwoods:													
Select white oaks	2	0	0	0	0	0	0	24	0	0	0	0	0
Select red oaks	1	0	0	0	0	2	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	2	0	0	0	0	6	0	0	0	0	0	0	0
Hard maple	4	0	0	0	0	7	0	19	0	0	0	0	0
Soft maple	1	0	0	0	0	0	0	9	0	0	0	0	0
Ash	10	0	0	38	6	14	5	0	33	0	0	0	0
Balsam poplar	41	0	0	14	47	25	25	186	0	0	0	0	0
Paper birch	129	12	0	79	148	140	198	143	36	101	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	165	255	0	39	93	194	190	261	37	211	0	0	0
Basswood	2	0	0	0	0	4	0	11	0	0	0	0	0
Elm	3	0	0	0	0	6	0	10	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	360	267	0	170	294	398	418	661	106	312	0	0	0
Total all species	1,144	627	427	709	837	1,219	1,533	1,868	874	891	0	0	0
Number of plots	67	5	2	5	12	21	11	7	2	2	0	0	0
Standard error	75	166	166	198	92	96	182	307	433	339	0	0	0
Average basal area	99	71	105	83	76	100	141	120	59	64	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.Minnesota State Total
Balsam Fir
Site Index 61-70

Table 18.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Balsam fir forest type - Site index class 71-80

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	22	0	0	0	0	0	48	109	0	0	0	0	0
Red pine	7	0	0	0	0	0	21	0	0	0	0	0	0
Jack pine	21	0	0	0	0	0	68	0	0	0	0	0	0
White spruce	113	84	0	19	0	221	168	0	0	0	0	0	0
Black spruce	40	31	0	57	0	0	74	0	0	0	0	0	0
Balsam fir	405	86	0	158	303	1,096	321	556	0	0	0	0	0
Tamarack	2	0	0	12	0	0	0	0	0	0	0	0	0
Northern white-cedar	50	0	0	0	328	58	30	154	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	660	201	0	246	630	1,375	729	819	0	0	0	0	0
Hardwoods:													
Select white oaks	18	0	0	0	0	69	8	48	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	4	0	0	0	0	0	12	0	0	0	0	0	0
Ash	4	0	0	0	0	0	11	0	0	0	0	0	0
Balsam poplar	7	0	0	0	0	39	0	0	0	0	0	0	0
Paper birch	128	212	0	70	203	0	48	749	0	0	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	170	45	0	200	147	258	170	218	0	0	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	3	0	0	0	0	16	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	334	257	0	270	350	382	249	1,015	0	0	0	0	0
Total all species	994	458	0	517	980	1,757	978	1,834	0	0	0	0	0
Number of plots	16	3	0	3	1	3	5	1	0	0	0	0	0
Standard error ^{3/}	142	59	0	206	R	258	100	R	0	0	0	0	0
Average basal area	86	35	0	74	116	124	87	128	0	0	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.

^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 19.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Balsam fir forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	17	0	17	4	4	10	22	32	46	42	30	318	0
Red pine	19	4	12	7	16	15	33	20	48	0	0	68	0
Jack pine	9	5	12	2	5	6	17	11	16	0	24	0	0
White spruce	40	25	17	3	36	35	52	72	54	172	86	142	0
Black spruce	52	48	28	54	40	57	54	65	78	13	70	51	0
Balsam fir	344	87	103	142	253	470	431	505	351	342	394	374	0
Tamarack	13	17	6	15	6	9	19	28	0	0	0	0	0
Northern white-cedar	52	18	24	62	56	40	56	36	191	36	171	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	546	204	220	289	417	641	684	769	783	606	776	953	0
Hardwoods:													
Select white oaks	1	0	0	0	0	2	0	4	0	0	0	0	0
Select red oaks	0	0	0	0	1	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	2	0	0	0	0	0	0	0
Hard maple	1	0	3	0	0	1	0	3	2	0	0	0	0
Soft maple	2	0	0	0	0	1	3	2	5	0	0	49	0
Ash	8	4	1	10	9	6	10	14	5	0	50	21	0
Balsam poplar	21	0	3	8	22	32	18	30	39	40	0	0	0
Paper birch	89	43	26	58	96	96	118	116	63	128	114	30	0
Bigtooth aspen	1	0	0	0	1	1	3	0	0	0	0	0	0
Quaking aspen	92	58	24	52	94	119	103	136	70	60	35	141	0
Basswood	2	0	0	2	0	3	0	10	0	0	0	0	0
Elm	2	0	2	0	1	4	3	1	3	0	0	20	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	219	105	60	130	224	268	258	316	186	229	199	261	0
Total all species	765	309	280	420	641	908	942	1,085	969	834	974	1,214	0
Number of plots	517	26	47	54	63	135	105	51	21	7	6	2	0
Standard error	24	55	29	62	51	43	50	88	136	153	243	597	0
Average basal area	83	37	50	70	79	93	98	99	95	85	80	85	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 20.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Northern white-cedar forest type - Site index class 0-50

(In cubic feet per acre)

Minnesota State Total
Northern White-cedar
Site Index 0-50

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	7	0	0	0	0	6	7	0	2	12	0	6	19
Red pine	4	0	0	0	25	0	0	17	0	0	0	0	3
Jack pine	2	0	0	0	0	0	3	11	0	0	0	0	0
White spruce	5	0	0	4	0	5	5	4	4	1	0	15	9
Black spruce	79	0	0	23	114	126	102	88	72	102	92	68	61
Balsam fir	58	0	22	16	60	24	70	48	57	62	92	72	59
Tamarack	26	0	27	2	11	23	21	57	26	21	30	20	25
Northern white-cedar	481	179	110	146	206	232	389	340	385	609	492	585	800
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	661	179	159	190	416	416	597	564	547	807	706	764	977
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	1	0	0	0	0	0	0	0	1	0	0	0	7
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	1	0	0	0
Ash	21	0	5	0	0	32	4	14	21	16	10	5	66
Balsam poplar	10	0	9	1	0	5	17	11	7	13	25	10	6
Paper birch	42	0	12	8	26	47	19	33	49	37	52	61	60
Bigtooth aspen	1	0	0	0	0	0	0	0	6	0	0	0	0
Quaking aspen	10	0	0	1	0	0	21	26	11	2	11	8	7
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	1	0	0	0	1
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	85	0	26	11	26	84	61	84	97	70	98	83	147
Total all species	746	179	185	200	443	501	658	648	644	877	804	848	1,124
Number of plots	318	2	8	17	14	10	27	40	37	41	27	40	55
Standard error	33	41	71	38	109	130	69	61	79	80	102	122	89
Average basal area	117	55	47	67	94	109	111	113	108	131	121	130	142

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 21.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Northern white-cedar forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	6	0	0	0	0	5	7	0	2	12	0	6	19
Red pine	4	0	0	0	22	0	0	17	0	0	0	0	3
Jack pine	2	0	0	0	0	4	3	10	0	0	0	0	0
White spruce	5	0	0	4	0	4	5	3	4	1	0	15	9
Black spruce	81	0	0	23	100	127	100	109	70	102	92	68	61
Balsam fir	62	0	22	16	67	69	75	57	55	62	92	72	59
Tamarack	26	0	27	2	10	26	25	50	26	21	30	20	25
Northern white-cedar	478	179	110	146	206	237	381	366	396	609	492	585	800
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	664	179	159	190	406	473	595	611	553	807	706	764	977
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	2	0	0	0	0	0	0	0	4	0	0	0	7
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	1	0	0	0
Ash	20	0	5	0	5	25	4	12	21	16	10	5	66
Balsam poplar	10	0	9	1	0	9	19	11	7	13	25	10	6
Paper birch	43	0	12	8	37	52	18	34	48	37	52	61	60
Bigtooth aspen	1	0	0	0	0	13	0	0	6	0	0	0	0
Quaking aspen	12	0	0	1	13	20	21	34	11	2	11	8	7
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	1	0	0	0	1
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	89	0	26	11	54	119	61	92	98	70	98	83	147
Total all species	753	179	185	200	460	591	656	703	651	877	804	848	1,124
Number of plots	330	2	8	17	16	13	28	45	38	41	27	40	55
Standard error	32	41	71	38	98	135	66	62	77	80	102	122	89
Average basal area	116	55	47	67	90	106	109	115	108	131	121	130	142

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 22.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Tamarack forest type - Site index class 0-50

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	2	0	3	0	0	1	2	0	12	2	0	0	0
Red pine	1	0	0	0	0	0	0	0	14	2	0	0	0
Jack pine	3	0	0	2	0	13	0	18	0	0	0	5	0
White spruce	1	2	0	1	0	2	3	0	2	0	0	0	0
Black spruce	45	7	19	59	31	50	54	52	65	36	36	91	49
Balsam fir	7	4	5	0	2	0	18	26	29	6	0	1	0
Tamarack	293	80	101	109	82	322	268	399	332	457	762	616	564
Northern white-cedar	11	0	3	11	0	0	23	0	11	12	0	27	37
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	364	94	131	183	116	388	368	495	465	514	797	740	651
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	2	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	4	2	0	0	0
Ash	1	0	0	0	0	2	0	0	0	2	0	2	0
Balsam poplar	2	0	1	0	0	0	0	21	2	4	0	0	8
Paper birch	8	8	3	2	3	2	17	18	26	3	0	9	6
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	3	1	0	3	1	3	2	21	7	0	0	0	4
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	2	0	0	1	0	6	0	2	7	4	0	3	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	16	11	3	6	4	13	19	62	45	15	0	14	18
Total all species	380	106	134	189	120	401	388	557	510	530	797	754	668
Number of plots	268	20	48	30	16	18	25	16	20	24	5	26	20
Standard error	21	26	20	29	31	58	53	87	80	56	188	66	68
Average basal area	53	27	32	53	47	63	51	52	67	61	75	71	70

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 23.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Tamarack forest type - Site index class 51-60

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	8	0	22	0	0	29	0	0	15	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	1	0	10	0	0	0	0	0	0	0	0	0	0
White spruce	1	0	0	0	0	0	3	0	0	0	0	0	0
Black spruce	60	0	90	0	52	64	73	125	37	0	0	0	0
Balsam fir	12	0	0	7	0	13	27	0	13	0	0	0	0
Tamarack	531	79	153	172	413	489	777	909	692	0	618	1,152	0
Northern white-cedar	9	0	10	0	69	0	0	0	22	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	622	79	285	180	534	596	881	1,034	779	0	618	1,152	0
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	1	0	0	4	0	6	0	0	0	0	0	0	0
Ash	4	0	0	0	0	0	0	0	70	0	0	0	0
Balsam poplar	1	0	0	0	0	0	3	0	0	0	0	0	0
Paper birch	4	0	0	0	0	8	9	0	0	0	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	10	0	40	26	0	0	3	0	0	0	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	21	0	40	30	0	14	15	0	70	0	0	0	0
Total all species	643	79	326	209	534	610	896	1,034	849	0	618	1,152	0
Number of plots	48	1	7	6	4	7	15	3	3	0	1	1	0
Standard error ^{3/}	71	R	113	85	208	151	150	172	169	0	R	R	0
Average basal area	50	11	34	25	47	45	67	61	61	0	41	60	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.Minnesota State Total
Tamarack
Site Index 51-60

Table 24.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Tamarack forest type - Site index class 61-70

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	6	0	0	0	0	0	0	0	0	62	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	4	0	0	0	0	0	14	0	0	0	0	0	0
Black spruce	30	0	0	0	66	0	0	0	0	106	0	0	0
Balsam fir	6	0	19	0	0	0	0	0	0	0	0	0	0
Tamarack	493	0	257	0	456	0	795	0	0	405	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	539	0	275	0	522	0	809	0	0	572	0	0	0
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam poplar	40	0	63	0	0	0	69	0	0	0	0	0	0
Paper birch	6	0	20	0	0	0	0	0	0	0	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	56	0	62	0	0	0	123	0	0	0	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	2	0	0	0	0	0	7	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	103	0	144	0	0	0	199	0	0	0	0	0	0
Total all species	642	0	420	0	522	0	1,009	0	0	572	0	0	0
Number of plots	10	0	3	0	3	0	3	0	0	1	0	0	0
Standard error ^{3/}	104	0	125	0	202	0	74	0	0	R	0	0	0
Average basal area	66	0	83	0	43	0	79	0	0	49	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.

^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 25.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Tamarack forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	3	0	6	0	0	9	1	0	12	4	0	0	0
Red pine	1	0	0	0	0	0	0	0	13	2	0	0	0
Jack pine	2	0	1	2	0	9	0	15	0	0	0	5	0
White spruce	1	2	0	1	0	2	4	0	2	0	0	0	0
Black spruce	47	7	26	49	39	50	58	64	61	38	30	87	49
Balsam fir	8	4	5	1	2	3	20	22	27	6	0	1	0
Tamarack	341	80	115	120	189	439	484	480	379	455	738	635	564
Northern white-cedar	10	0	4	10	12	0	13	0	12	11	0	26	37
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	413	93	157	182	241	511	579	580	506	517	768	755	651
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	2	0	0	0	3	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	1	0	0	1	0	2	0	0	3	2	0	0	0
Ash	1	0	0	0	0	1	0	0	9	2	0	2	0
Balsam poplar	5	0	4	0	0	0	20	17	2	4	0	0	8
Paper birch	7	7	3	1	2	4	13	15	23	3	0	9	6
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	6	1	8	7	1	2	11	18	6	0	0	0	4
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	2	0	0	1	0	6	2	2	6	4	0	3	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	22	11	15	10	3	17	45	52	48	15	0	14	18
Total all species	435	104	172	192	244	528	624	632	554	531	768	769	668
Number of plots	329	21	58	36	23	27	44	19	23	25	6	27	20
Standard error	21	24	24	28	60	74	72	86	76	54	156	65	68
Average basal area	53	27	35	49	47	60	63	54	66	61	70	70	70

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.Minnesota State Total
Tamarack
Site Index All Classes

Table 26.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

White spruce forest type - Site index class 61-70													
(In cubic feet per acre)													
Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	40	0	0	0	134	0	0	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	33	0	0	0	0	0	334	0	0	0	0	0	0
White spruce	309	0	0	187	208	665	95	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	85	0	0	0	120	165	0	0	0	0	0	0	0
Tamarack	21	0	0	0	0	70	0	0	0	0	0	0	0
Northern white-cedar	18	0	0	0	58	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	506	0	0	187	521	900	429	0	0	0	0	0	0
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam poplar	6	0	0	0	0	20	0	0	0	0	0	0	0
Paper birch	160	0	0	32	232	279	0	0	0	0	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	158	0	0	38	130	371	0	0	0	0	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	324	0	0	69	362	670	0	0	0	0	0	0	0
Total all species	830	0	0	256	883	1,570	429	0	0	0	0	0	0
Number of plots	10	1	0	2	3	3	1	0	0	0	0	0	0
Standard error ^{3/}	249	R	0	256	464	405	R	0	0	0	0	0	0
Average basal area	71	0	0	49	91	100	38	0	0	0	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 27.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

White spruce forest type					All site index classes								
(In cubic feet per acre)													
Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	25	0	0	0	100	0	15	32	0	188	0	0	0
Red pine	21	0	31	0	124	0	0	78	0	0	0	0	0
Jack pine	35	0	0	41	0	27	70	159	0	0	0	0	0
White spruce	302	0	21	161	188	453	364	525	56	575	948	593	0
Black spruce	21	0	0	0	0	53	28	76	0	0	0	0	0
Balsam fir	85	0	9	32	102	124	93	202	217	114	0	111	0
Tamarack	10	0	0	0	0	30	0	65	0	0	0	0	0
Northern white-cedar	34	0	0	0	44	0	24	0	799	90	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	535	0	62	235	558	686	593	1,137	1,071	966	948	705	0
Hardwoods:													
Select white oaks	1	0	0	0	0	0	0	0	0	12	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam poplar	12	0	0	0	0	9	11	81	0	29	0	0	0
Paper birch	83	19	11	21	204	119	55	22	180	79	390	181	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	105	0	0	88	114	232	138	0	0	313	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	200	19	11	109	318	360	203	103	180	433	390	181	0
Total all species	735	19	73	344	876	1,046	797	1,240	1,251	1,399	1,338	886	0
Number of plots	40	5	4	3	4	7	9	3	1	2	1	1	0
Standard error ^{3/}	95	19	43	172	328	260	131	308	R	256	R	R	0
Average basal area	65	4	17	62	86	84	80	83	98	104	70	64	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 28.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Oak-hickory forest type - Site index class 0-50

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	2	1	2	0	0	0	0	0	6	2	2	2	0
Red pine	9	4	11	0	0	14	26	0	5	14	0	22	0
Jack pine	8	7	11	0	108	21	14	2	7	0	0	0	0
White spruce	1	0	0	0	0	2	2	3	0	0	0	2	0
Black spruce	0	0	0	0	0	0	0	0	1	0	0	0	0
Balsam fir	1	0	0	0	0	10	0	0	0	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	2	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	4	0	0	0	10	0	1	10	1	2	10	0	0
Total	24	11	24	0	118	47	43	16	22	17	11	26	0
Hardwoods:													
Select white oaks	254	50	75	63	62	185	113	253	272	431	321	306	255
Select red oaks	230	41	72	0	267	143	305	239	299	240	221	272	361
Other red oaks	9	0	0	0	0	2	0	2	4	12	31	8	0
Hickory	7	0	0	20	0	0	8	5	2	4	15	19	9
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	4	0	3	0	0	0	0	6	3	0	6	19	0
Soft maple	2	0	0	0	0	9	0	1	2	0	5	0	0
Ash	13	0	3	0	0	1	8	7	19	31	22	2	0
Balsam poplar	2	2	0	0	35	0	0	3	3	0	2	0	0
Paper birch	28	10	12	45	11	65	45	51	23	12	19	23	0
Bigtooth aspen	5	2	3	0	17	17	3	2	10	2	3	0	0
Quaking aspen	40	7	22	0	60	49	77	51	60	20	25	35	0
Basswood	22	0	0	0	0	51	11	19	20	17	35	39	29
Elm	33	9	14	26	9	18	15	35	31	54	42	40	37
Select hardwoods	8	0	0	0	5	0	6	4	6	16	16	14	6
Other hardwoods	3	0	0	0	0	0	0	7	3	7	4	3	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	659	120	205	154	467	540	591	686	757	846	766	779	698
Total all species	684	131	229	154	585	587	633	702	779	864	777	805	698
Number of plots	296	14	16	3	8	18	30	40	43	45	48	26	5
Standard error	23	29	36	23	101	72	44	59	54	72	42	96	113
Average basal area	79	30	47	35	76	77	79	82	92	87	85	84	86

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 29.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Oak-hickory forest type - Site index class 51-60

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	3	0	0	0	0	0	3	0	20	0	0	0	0
Red pine	5	0	0	0	0	2	4	7	16	0	0	0	0
Jack pine	12	48	20	0	0	21	2	26	0	0	0	0	0
White spruce	0	0	0	0	0	1	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	0	0	0	0	0	1	0	0	0	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	2	0	0	0	0	0	0	7	2	0	0	0	0
Total	23	48	20	0	0	25	9	41	38	0	0	0	0
Hardwoods:													
Select white oaks	168	0	81	0	188	125	206	195	127	252	182	249	0
Select red oaks	485	82	99	0	222	384	431	542	628	611	842	682	0
Other red oaks	9	20	0	0	0	3	4	16	27	0	5	0	0
Hickory	14	0	22	0	12	29	7	21	0	0	13	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	8	0	0	0	21	3	8	7	2	38	10	16	0
Soft maple	8	0	0	0	3	3	17	3	12	9	0	34	0
Ash	11	16	0	0	30	10	17	11	7	0	9	0	0
Balsam poplar	3	0	0	0	0	4	0	1	10	7	0	0	0
Paper birch	71	0	14	0	31	49	130	112	53	66	36	24	0
Bigtooth aspen	21	0	0	0	0	29	24	31	28	16	0	0	0
Quaking aspen	67	0	0	0	201	103	102	24	84	0	11	0	0
Basswood	35	15	0	0	22	12	47	29	60	47	64	70	0
Elm	37	0	0	0	26	24	18	44	53	58	92	56	0
Select hardwoods	12	0	0	0	30	10	6	15	4	30	16	4	0
Other hardwoods	6	0	0	0	0	2	1	9	11	41	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	956	133	217	0	787	791	1,017	1,061	1,106	1,176	1,281	1,137	0
Total all species	978	180	237	0	787	816	1,027	1,102	1,145	1,176	1,281	1,137	0
Number of plots	166	4	6	0	9	37	27	35	21	9	11	7	0
Standard error	39	104	41	0	162	56	102	82	110	130	136	153	0
Average basal area	89	27	53	0	91	84	96	93	100	89	104	91	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 30.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Oak-hickory forest type - Site index class 61-70

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	2	0	0	0	0	6	0	0	0	0	0	0	0
Red pine	4	0	87	0	0	7	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	1	0	0	15	0	0	0	3	0	0	0	0	0
Tamarack	1	0	0	0	0	3	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	1	0	0	0	0	0	0	5	0	0	0	0	0
Total	9	0	87	15	0	16	0	8	0	0	0	0	0
Hardwoods:													
Select white oaks	157	0	0	68	59	182	159	175	111	87	593	0	0
Select red oaks	550	217	312	118	423	530	718	542	714	678	613	0	0
Other red oaks	5	0	0	0	0	0	24	0	0	0	0	0	0
Hickory	29	0	0	0	66	1	25	87	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	11	0	0	0	8	13	9	18	9	0	0	0	0
Soft maple	12	0	0	6	7	33	4	6	0	0	0	0	0
Ash	11	0	0	0	4	20	9	2	26	0	12	0	0
Balsam poplar	1	0	0	0	0	5	0	0	0	0	0	0	0
Paper birch	87	0	63	42	56	129	95	100	0	0	23	0	0
Bigtooth aspen	17	0	0	0	7	15	36	8	31	0	0	0	0
Quaking aspen	85	0	0	0	114	110	107	73	16	173	0	0	0
Basswood	56	343	0	0	50	52	33	81	118	0	72	0	0
Elm	50	0	0	0	25	28	38	89	151	0	142	0	0
Select hardwoods	10	0	0	0	23	4	5	7	50	51	0	0	0
Other hardwoods	4	0	0	0	14	2	3	5	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,085	561	375	235	858	1,124	1,267	1,194	1,226	989	1,455	0	0
Total all species	1,093	561	461	250	858	1,141	1,267	1,202	1,226	989	1,455	0	0
Number of plots	102	1	2	6	10	29	23	19	7	2	3	0	0
Standard error ^{3/}	50	R	250	51	132	93	101	87	152	278	423	0	0
Average basal area	92	52	58	41	76	98	99	102	91	94	100	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 31.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Oak-hickory forest type - Site index class 71-80

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	9	0	0	0	0	0	32	0	0	0	0	0	0
Red pine	6	0	0	0	12	0	0	0	0	0	0	96	0
Jack pine	6	0	120	0	0	0	0	0	0	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	0	0	0	0	0	0	0	0	0	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	4	0	0	0	15	0	0	0	0	0	0	0	0
Total	24	0	120	0	28	0	32	0	0	0	0	96	0
Hardwoods:													
Select white oaks	199	0	0	0	117	153	248	298	0	237	0	651	0
Select red oaks	672	0	0	0	324	865	887	852	0	599	0	1,002	0
Other red oaks	44	0	0	0	68	0	41	101	0	0	0	0	0
Hickory	41	0	0	0	74	8	45	50	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	5	0	0	0	10	0	11	0	0	0	0	0	0
Soft maple	12	0	0	0	0	11	30	0	0	0	0	62	0
Ash	5	0	0	0	9	6	4	0	0	0	0	0	0
Balsam poplar	2	0	0	0	0	0	8	0	0	0	0	0	0
Paper birch	57	0	0	0	69	69	85	0	0	0	0	104	0
Bigtooth aspen	15	0	0	0	13	49	7	0	0	0	0	0	0
Quaking aspen	62	0	58	0	66	79	79	21	0	0	0	96	0
Basswood	59	0	0	0	13	175	55	45	0	0	0	0	0
Elm	96	0	0	0	65	70	97	209	0	163	0	0	0
Select hardwoods	31	0	132	0	9	25	34	50	0	22	0	0	0
Other hardwoods	3	0	53	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,302	0	243	0	836	1,509	1,628	1,626	0	1,021	0	1,915	0
Total all species	1,326	0	363	0	864	1,509	1,660	1,626	0	1,021	0	2,011	0
Number of plots	41	0	2	0	11	8	11	6	0	2	0	1	0
Standard error ^{3/}	92	0	7	0	90	230	148	136	0	341	0	R	0
Average basal area	96	0	53	0	79	111	110	98	0	75	0	139	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.Minnesota State Total
Oak-hickory
Site Index 71-80

Table 32.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}Minnesota State Total
Oak-hickory
Site Index All Classes

Oak-hickory forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	2	1	1	0	0	2	5	0	9	1	1	2	0
Red pine	7	3	13	0	3	5	10	3	8	11	0	20	0
Jack pine	7	15	21	0	21	12	5	10	4	0	0	0	0
White spruce	1	0	0	0	0	1	1	1	0	0	0	1	0
Black spruce	0	0	0	0	0	0	0	0	1	0	0	0	0
Balsam fir	1	0	0	10	0	2	0	1	0	0	0	0	0
Tamarack	0	0	0	0	0	1	0	0	1	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	3	0	0	0	6	0	0	8	1	1	7	0	0
Total	21	18	35	10	30	23	20	22	25	13	9	23	0
Hardwoods:													
Select white oaks	208	37	65	66	119	154	165	221	213	375	310	305	255
Select red oaks	398	59	91	79	352	478	537	439	437	323	350	378	361
Other red oaks	10	4	0	0	18	2	12	13	10	9	25	6	0
Hickory	15	0	5	7	39	14	16	29	1	3	14	15	9
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	6	0	2	0	9	5	6	8	3	6	6	18	0
Soft maple	6	0	0	4	4	13	9	3	4	1	4	9	0
Ash	11	3	2	0	12	10	10	7	16	23	19	1	0
Balsam poplar	2	2	0	0	7	3	1	2	5	1	1	0	0
Paper birch	52	8	16	43	47	80	88	79	30	20	22	25	0
Bigtooth aspen	13	1	2	0	8	29	18	13	17	4	3	0	0
Quaking aspen	58	5	18	0	106	100	92	44	63	27	21	29	0
Basswood	34	21	0	0	21	46	32	36	41	21	42	44	29
Elm	42	7	9	9	43	29	31	59	50	55	56	42	37
Select hardwoods	12	0	10	0	16	10	10	11	10	19	15	11	6
Other hardwoods	4	0	4	0	5	1	1	7	5	13	3	2	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	872	146	223	208	806	974	1,027	970	907	899	891	886	698
Total all species	892	164	259	218	836	997	1,048	992	931	912	899	909	698
Number of plots	618	19	26	9	41	98	93	100	71	60	62	34	5
Standard error	21	37	31	37	72	56	58	49	53	61	52	88	113
Average basal area	86	31	50	39	82	91	92	91	94	87	89	87	86

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 33.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Elm-ash-cottonwood forest type - Site index class 0-50

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	3	0	0	0	8	0	0	0	4	3	26	0	0
Red pine	1	0	0	0	0	10	0	0	0	2	0	0	0
Jack pine	1	0	0	0	0	0	0	0	0	10	0	0	0
White spruce	5	4	12	0	0	2	9	2	3	17	0	0	18
Black spruce	5	0	0	3	9	13	4	0	6	9	0	9	0
Balsam fir	41	6	38	8	47	45	54	43	70	39	48	73	24
Tamarack	5	4	15	6	0	0	0	0	26	8	0	3	0
Northern white-cedar	36	12	30	9	13	8	45	9	14	64	51	149	0
Other softwoods	0	0	0	0	0	0	0	0	4	0	0	0	0
Total	98	26	94	25	78	78	112	54	127	151	125	235	43
Hardwoods:													
Select white oaks	5	2	0	2	0	2	17	3	0	8	22	0	0
Select red oaks	1	2	0	0	0	0	0	3	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	2	0	0	0	0	0	0	0	0	0
Hard maple	1	2	0	0	0	0	3	0	0	0	0	4	0
Soft maple	11	23	0	0	4	6	2	4	3	9	3	0	274
Ash	255	79	127	119	114	266	321	368	279	373	323	395	251
Balsam poplar	19	11	7	12	17	17	18	17	70	16	16	15	33
Paper birch	34	7	23	7	27	79	26	54	71	26	18	53	30
Bigtooth aspen	1	0	0	4	0	0	2	0	0	0	0	0	0
Quaking aspen	27	15	0	14	15	36	46	62	60	10	38	7	8
Basswood	16	0	0	0	10	0	27	27	3	55	7	19	42
Elm	55	9	41	14	53	30	69	83	96	80	33	61	230
Select hardwoods	0	0	0	0	0	0	0	0	0	0	2	0	0
Other hardwoods	21	0	0	1	2	41	4	120	0	3	60	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	445	149	198	176	242	477	535	740	581	579	522	554	867
Total all species	543	175	292	201	320	555	647	794	708	730	646	789	910
Number of plots	218	22	18	21	14	18	24	20	15	25	19	17	5
Standard error	27	27	48	37	69	51	59	100	73	88	79	119	277
Average basal area	73	30	51	43	56	84	86	92	94	84	90	97	90

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 34.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Elm-ash-cottonwood forest type - Site index class 51-60

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	2	0	0	0	0	0	4	2	7	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	1	0	0	0	0	0	0	5	0	0	0	0	0
White spruce	12	0	6	0	9	16	12	18	12	4	5	0	55
Black spruce	4	0	0	0	0	9	0	4	6	5	0	0	20
Balsam fir	54	0	55	31	15	38	66	82	50	37	59	141	56
Tamarack	4	71	0	0	0	0	0	0	7	0	0	0	0
Northern white-cedar	26	0	0	37	0	10	10	6	6	71	95	77	124
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	103	71	61	68	24	72	93	116	90	116	160	218	254
Hardwoods:													
Select white oaks	12	0	0	0	5	0	6	12	35	26	28	0	0
Select red oaks	2	0	0	0	7	0	3	0	6	0	0	0	0
Other red oaks	1	0	0	0	0	0	0	0	8	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	7	0	0	0	0	0	3	3	6	16	40	0	19
Hard maple	4	0	0	0	0	2	13	7	4	0	0	0	0
Soft maple	18	0	4	0	25	4	20	2	18	0	78	135	0
Ash	445	129	103	42	268	427	421	581	441	925	444	306	720
Balsam poplar	33	27	11	0	26	64	16	19	40	23	85	14	57
Paper birch	43	8	14	25	6	38	34	40	83	4	93	135	43
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	35	37	5	11	27	60	29	37	26	39	41	32	84
Basswood	9	0	8	28	7	2	7	6	20	17	0	48	0
Elm	113	11	42	112	15	79	103	72	186	159	174	195	257
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	23	0	0	159	0	25	34	29	11	0	26	44	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	747	212	187	376	384	699	689	808	884	1,208	1,008	910	1,180
Total all species	850	283	248	444	409	771	782	924	974	1,324	1,168	1,128	1,434
Number of plots	175	8	12	5	7	22	33	25	24	14	15	4	6
Standard error	42	82	45	108	111	74	73	86	101	177	205	227	275
Average basal area	82	31	36	60	65	78	83	88	89	105	104	93	119

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 35.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Elm-ash-cottonwood forest type - Site index class 61-70

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	1	0	0	0	0	0	0	5	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	6	0	28	0	0	37	5	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	31	0	0	0	26	0	51	38	26	67	0	18	67
Tamarack	3	0	0	0	0	0	10	6	0	0	0	0	0
Northern white-cedar	24	0	0	0	93	0	16	16	0	0	0	172	69
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	65	0	28	0	119	37	81	65	26	67	0	190	135
Hardwoods:													
Select white oaks	14	22	0	0	0	21	5	12	45	43	0	0	18
Select red oaks	3	0	0	0	0	20	0	3	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	1	0	0	0	0	0	0	5	0	0	0	0	0
Hard maple	2	0	0	0	0	0	0	9	0	0	0	0	0
Soft maple	88	0	25	0	0	43	94	103	324	97	63	0	0
Ash	452	39	274	69	230	253	474	665	301	521	687	698	673
Balsam poplar	52	0	0	286	36	10	101	36	98	20	0	0	0
Paper birch	43	44	27	0	0	20	81	61	19	41	0	54	14
Bigtooth aspen	11	0	0	0	0	0	0	5	0	0	0	225	0
Quaking aspen	39	20	23	0	64	82	44	55	0	56	0	0	0
Basswood	17	0	0	0	0	49	21	18	0	32	0	0	43
Elm	149	42	0	0	76	122	98	107	406	91	165	294	493
Select hardwoods	4	18	0	20	0	6	8	3	0	0	0	0	0
Other hardwoods	117	37	0	309	388	316	74	55	32	0	304	0	90
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	993	222	348	683	795	943	998	1,139	1,225	901	1,219	1,271	1,331
Total all species	1,058	222	376	683	914	979	1,079	1,204	1,250	968	1,219	1,462	1,467
Number of plots	71	3	3	2	5	7	15	16	7	4	3	3	3
Standard error	61	86	112	329	205	134	114	142	167	170	183	416	291
Average basal area	88	31	39	71	108	83	87	94	101	67	102	114	116

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 36.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Elm-ash-cottonwood forest type - Site index class 71-80

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	31	0	0	44	0	28	43	0	56	0	0	0	0
Tamarack	4	0	0	0	0	0	11	0	0	0	0	0	0
Northern white-cedar	4	0	0	0	0	15	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	38	0	0	44	0	42	53	0	56	0	0	0	0
Hardwoods:													
Select white oaks	22	0	0	0	0	0	26	0	0	370	0	0	0
Select red oaks	7	0	0	0	0	0	22	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	5	0	0	0	0	0	0	0	41	0	0	0	0
Soft maple	193	0	0	0	0	434	89	411	187	0	0	0	0
Ash	350	0	21	114	333	520	311	51	552	654	0	0	0
Balsam poplar	77	0	0	15	316	21	102	0	226	0	0	0	0
Paper birch	43	0	0	0	0	118	38	0	0	0	0	0	0
Bigtooth aspen	3	0	0	0	0	0	8	0	0	0	0	0	0
Quaking aspen	26	0	57	21	0	0	62	0	0	0	0	0	0
Basswood	45	0	0	0	0	17	66	0	0	514	0	0	0
Elm	143	0	62	45	41	110	158	244	241	204	0	0	0
Select hardwoods	2	0	0	0	0	0	7	0	0	0	0	0	0
Other hardwoods	199	0	20	218	0	258	254	349	32	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,117	0	160	414	689	1,478	1,144	1,055	1,279	1,741	0	0	0
Total all species	1,155	0	160	457	689	1,520	1,197	1,055	1,335	1,741	0	0	0
Number of plots	27	0	2	2	1	7	9	2	3	1	0	0	0
Standard error ^{3/}	147	0	4	70	R	361	170	556	637	R	0	0	0
Average basal area	95	0	36	83	98	108	104	72	92	109	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 37.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Elm-ash-cottonwood forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	2	0	0	0	4	0	2	2	5	1	13	0	0
Red pine	0	0	0	0	0	3	0	0	0	1	0	0	0
Jack pine	1	0	0	0	0	0	0	2	0	6	0	0	0
White spruce	7	3	10	0	2	12	8	8	7	11	2	0	30
Black spruce	3	0	0	2	5	8	1	2	5	6	0	7	8
Balsam fir	43	4	38	13	33	34	55	55	53	40	48	78	47
Tamarack	4	20	8	4	0	0	3	2	12	4	0	2	0
Northern white-cedar	29	8	15	12	24	8	20	9	7	59	65	140	68
Other softwoods	0	0	0	0	0	0	0	0	1	0	0	0	0
Total	90	35	72	32	69	65	88	78	90	129	129	227	153
Hardwoods:													
Select white oaks	10	3	0	1	1	3	11	9	23	25	23	0	4
Select red oaks	2	1	0	0	2	3	4	2	3	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	4	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	3	0	0	1	0	0	1	2	3	5	16	0	8
Hard maple	3	1	0	0	0	1	8	5	5	0	0	3	0
Soft maple	41	15	3	0	9	81	47	60	67	14	38	23	98
Ash	353	87	125	103	184	356	372	511	378	569	402	418	543
Balsam poplar	32	14	7	29	34	35	40	22	69	18	43	13	36
Paper birch	38	11	19	9	15	59	39	48	65	20	47	67	32
Bigtooth aspen	2	0	0	3	0	0	2	1	0	0	0	28	0
Quaking aspen	31	21	7	13	27	46	38	48	31	23	36	10	39
Basswood	15	0	3	5	7	9	21	15	11	51	3	22	24
Elm	96	12	39	32	47	71	95	107	193	109	101	113	298
Select hardwoods	1	2	0	1	0	1	2	1	0	0	1	0	0
Other hardwoods	54	3	1	63	73	133	88	73	12	2	66	7	19
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	681	171	205	259	398	797	768	903	864	835	775	703	1,101
Total all species	771	206	276	291	467	862	856	982	954	964	904	930	1,254
Number of plots	497	33	35	30	27	55	85	64	49	44	37	24	14
Standard error	25	28	31	44	72	80	47	66	72	88	101	111	170
Average basal area	80	30	44	51	69	86	87	91	92	90	97	98	108

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.Minnesota State Total
Elm-ash-cottonwood
Site Index All Classes

Table 38.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Maple-basswood forest type - Site index class 0-50

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	6	0	20	0	0	7	0	10	14	3	4	14	0
Red pine	0	0	0	0	0	0	0	0	3	0	0	0	0
Jack pine	1	0	0	0	0	8	0	0	0	0	0	0	0
White spruce	4	4	0	0	0	6	10	6	0	4	0	2	14
Black spruce	1	0	0	0	0	3	2	0	0	0	0	0	0
Balsam fir	32	0	0	0	39	22	30	33	23	56	57	60	26
Tamarack	1	0	22	0	0	3	0	0	0	0	0	0	0
Northern white-cedar	11	0	0	0	0	3	14	0	8	3	51	22	25
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	57	4	43	0	39	52	56	48	49	66	111	99	65
Hardwoods:													
Select white oaks	34	19	3	5	16	14	63	62	45	39	21	16	45
Select red oaks	33	0	6	2	4	2	59	56	82	30	33	24	15
Other red oaks	0	0	0	0	0	0	0	0	3	0	0	0	0
Hickory	2	10	0	0	0	0	4	0	3	0	0	6	0
Yellow birch	3	0	0	0	0	0	0	0	2	0	13	20	0
Hard maple	78	15	34	19	47	10	68	94	86	64	144	220	109
Soft maple	20	9	31	10	0	19	17	32	9	13	47	30	8
Ash	64	3	26	63	20	52	85	92	67	91	63	76	23
Balsam poplar	12	0	0	0	8	13	8	39	11	11	12	0	13
Paper birch	41	12	31	24	72	59	36	41	69	31	26	43	28
Bigtooth aspen	4	0	0	0	0	0	12	8	9	0	7	0	0
Quaking aspen	49	13	20	48	9	47	27	98	19	15	131	3	158
Basswood	127	3	0	5	20	166	125	148	128	189	67	153	398
Elm	125	54	33	121	76	77	69	184	126	179	187	166	137
Select hardwoods	2	5	0	0	0	2	3	4	0	0	9	2	0
Other hardwoods	8	14	0	4	0	16	0	24	7	5	11	3	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	602	159	184	300	273	477	576	881	666	669	770	762	933
Total all species	659	163	227	300	312	529	632	930	714	735	881	862	998
Number of plots	200	10	9	11	9	24	25	24	22	24	18	15	9
Standard error	33	39	36	55	58	72	67	121	77	57	182	92	159
Average basal area	80	28	54	57	61	75	82	95	91	87	90	88	99

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.

^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 39.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Maple-basswood forest type - Site index class 51-60

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	8	4	0	0	4	4	14	11	9	0	0	0	49
Red pine	1	0	0	0	0	0	2	3	0	0	0	0	0
Jack pine	2	0	0	0	0	0	0	12	0	0	0	8	0
White spruce	10	10	0	0	20	9	8	4	23	13	0	0	16
Black spruce	1	0	0	0	0	0	0	3	1	0	0	0	0
Balsam fir	29	4	25	9	31	45	36	32	23	5	32	10	12
Tamarack	4	0	0	27	10	5	1	1	9	0	0	0	0
Northern white-cedar	7	7	0	0	6	3	1	5	12	13	46	0	20
Other softwoods	1	0	0	0	0	0	0	0	0	5	12	0	0
Total	62	25	25	36	71	65	63	72	77	35	90	18	97
Hardwoods:													
Select white oaks	53	32	0	0	29	23	47	91	92	27	71	62	70
Select red oaks	53	59	26	26	34	41	78	50	49	74	38	88	0
Other red oaks	1	0	0	0	0	2	1	1	0	3	0	0	0
Hickory	2	0	0	0	4	5	0	2	0	0	0	6	0
Yellow birch	8	0	0	0	0	18	4	1	27	0	14	0	0
Hard maple	118	22	26	0	51	79	172	90	145	165	220	97	349
Soft maple	30	0	35	32	27	30	24	40	30	17	29	58	0
Ash	75	51	48	19	51	71	52	115	91	70	103	82	54
Balsam poplar	18	13	17	0	9	17	8	6	4	101	38	40	8
Paper birch	68	30	29	41	57	129	93	65	38	26	48	54	0
Bigtooth aspen	7	0	0	0	0	6	13	14	9	0	3	0	0
Quaking aspen	50	4	27	77	82	59	58	48	52	25	47	30	0
Basswood	190	37	19	20	106	156	198	232	199	257	228	356	352
Elm	137	93	23	23	99	72	90	154	221	172	110	415	166
Select hardwoods	3	0	0	0	0	2	7	10	1	0	0	0	0
Other hardwoods	6	0	0	0	2	1	16	2	9	8	5	9	21
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	820	340	250	237	550	712	860	925	967	946	954	1,295	1,021
Total all species	882	365	275	273	622	777	922	996	1,044	981	1,044	1,313	1,118
Number of plots	317	10	12	8	23	49	61	51	46	19	17	16	5
Standard error	26	55	53	59	56	48	58	65	55	121	90	158	97
Average basal area	91	52	53	47	75	90	96	93	104	94	99	107	114

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.Minnesota State Total
Maple-basswood
Site Index 51-60

Table 40.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Maple-basswood forest type - Site index class 61-70

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	11	0	5	0	0	7	0	23	13	0	69	0	0
Red pine	0	0	0	0	0	1	0	0	0	0	0	0	0
Jack pine	1	0	12	0	0	0	2	0	0	0	0	0	0
White spruce	5	0	5	0	9	0	2	6	7	0	0	25	23
Black spruce	1	0	17	0	0	4	0	0	0	0	0	0	0
Balsam fir	25	0	3	0	10	39	26	23	47	3	13	0	60
Tamarack	1	0	0	17	0	1	0	0	0	7	0	0	0
Northern white-cedar	3	0	0	0	0	0	0	0	3	0	0	16	101
Other softwoods	2	0	0	0	0	0	2	8	0	0	0	0	0
Total	48	0	42	17	19	51	31	60	70	10	82	41	184
Hardwoods:													
Select white oaks	61	0	11	20	19	50	50	80	81	39	19	92	20
Select red oaks	66	0	32	10	57	76	75	84	80	180	56	48	0
Other red oaks	1	0	17	0	0	0	0	0	0	5	0	0	0
Hickory	1	0	6	0	0	0	0	0	0	15	0	0	0
Yellow birch	3	0	0	0	0	12	1	0	9	3	0	0	0
Hard maple	146	0	20	60	256	102	153	105	168	56	397	214	328
Soft maple	30	0	23	0	31	30	40	24	16	74	30	15	46
Ash	85	0	4	56	76	52	106	96	94	61	108	90	279
Balsam poplar	14	0	0	0	0	24	27	6	16	0	0	12	28
Paper birch	71	0	26	51	116	52	92	82	69	19	94	71	10
Bigtooth aspen	9	0	3	0	0	11	10	1	27	12	0	10	0
Quaking aspen	49	249	101	37	87	44	62	61	23	5	5	8	0
Basswood	247	0	50	18	74	288	328	182	380	289	313	175	0
Elm	229	0	18	48	83	140	142	304	334	503	281	395	645
Select hardwoods	6	0	0	5	3	2	2	20	6	5	10	0	0
Other hardwoods	23	0	2	12	3	16	12	34	40	51	47	4	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,043	249	314	318	805	899	1,099	1,079	1,343	1,317	1,361	1,134	1,356
Total all species	1,091	249	356	335	825	950	1,130	1,139	1,412	1,327	1,443	1,175	1,540
Number of plots	233	2	12	7	13	34	53	42	31	13	12	10	4
Standard error	35	249	37	61	91	62	62	65	108	160	153	165	261
Average basal area	97	34	54	52	83	100	101	96	110	102	110	100	133

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 41.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Maple-basswood forest type - Site index class 71-80

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	14	0	0	0	0	8	7	51	0	0	0	0	0
Red pine	1	0	0	0	0	0	7	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	10	0	0	0	0	28	9	0	15	37	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	32	0	0	0	0	43	73	9	51	56	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	9	0	0	0	0	29	0	0	0	80	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	66	0	0	0	0	108	96	60	66	173	0	0	0
Hardwoods:													
Select white oaks	58	0	30	58	54	24	89	49	60	12	246	0	0
Select red oaks	62	0	0	90	74	45	46	49	92	112	183	0	0
Other red oaks	4	0	0	0	0	21	0	0	0	0	0	0	0
Hickory	4	0	0	0	9	4	4	0	10	0	0	0	0
Yellow birch	2	0	0	0	0	0	5	5	0	0	0	0	0
Hard maple	176	0	37	79	143	72	190	151	320	223	242	787	624
Soft maple	16	0	0	0	19	0	43	27	0	0	0	0	0
Ash	86	0	20	62	74	107	56	105	118	0	54	0	590
Balsam poplar	5	0	0	0	0	6	0	11	18	0	0	0	0
Paper birch	101	0	0	181	134	106	133	55	55	245	99	0	0
Bigtooth aspen	6	0	0	20	0	0	22	5	0	0	0	0	0
Quaking aspen	84	0	0	172	118	158	68	93	0	56	0	0	0
Basswood	347	0	0	136	303	260	346	429	451	500	599	122	212
Elm	270	0	148	233	115	222	160	367	450	542	244	0	601
Select hardwoods	6	0	0	16	5	10	5	10	0	0	0	0	0
Other hardwoods	26	0	35	37	0	19	43	24	36	51	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,253	0	269	1,084	1,048	1,055	1,209	1,378	1,610	1,742	1,666	909	2,028
Total all species	1,319	0	269	1,084	1,048	1,162	1,306	1,438	1,676	1,915	1,666	909	2,028
Number of plots	80	0	3	3	10	14	15	17	9	4	3	1	1
Standard error ^{3/}	69	0	87	236	159	139	105	140	202	470	587	R	R
Average basal area	100	0	50	71	88	101	106	101	111	121	128	98	112

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.Minnesota State Total
Maple-basswood
Site Index 71-80

Table 42.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Maple-basswood forest type - Site index class 81-91

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	4	0	0	0	17	0	0	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	30	0	0	0	73	22	0	0	0	104	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	11	0	0	0	46	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	45	0	0	0	136	22	0	0	0	104	0	0	0
Hardwoods:													
Select white oaks	40	0	0	0	16	16	108	20	0	0	0	0	0
Select red oaks	96	0	0	0	0	261	157	0	0	0	0	0	0
Other red oaks	19	0	0	0	0	95	0	0	0	0	0	0	0
Hickory	18	0	0	0	0	46	0	76	0	0	0	0	0
Yellow birch	8	0	0	0	21	17	0	0	0	0	0	0	0
Hard maple	102	0	0	0	49	239	79	0	253	0	0	0	0
Soft maple	69	0	0	0	121	23	101	62	0	0	0	0	0
Ash	120	0	0	0	155	14	98	291	154	64	0	0	0
Balsam poplar	2	0	0	0	9	0	0	0	0	0	0	0	0
Paper birch	85	0	0	0	92	228	61	0	0	0	0	0	0
Bigtooth aspen	42	0	0	0	73	75	35	0	0	0	0	0	0
Quaking aspen	110	0	0	0	244	210	36	0	0	0	0	0	0
Basswood	415	0	0	0	312	548	532	92	490	388	0	0	0
Elm	422	0	0	0	193	22	726	504	187	1,160	0	0	0
Select hardwoods	9	0	0	0	0	0	31	0	0	0	0	0	0
Other hardwoods	29	0	0	0	0	0	89	0	0	51	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,587	0	0	0	1,286	1,794	2,053	1,045	1,085	1,662	0	0	0
Total all species	1,633	0	0	0	1,422	1,816	2,053	1,045	1,085	1,766	0	0	0
Number of plots	25	0	0	0	6	5	7	3	2	2	0	0	0
Standard error	150	0	0	0	143	390	238	498	484	1,042	0	0	0
Average basal area	113	0	0	0	122	132	125	72	86	83	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 43.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Maple-basswood forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	9	2	7	0	3	6	6	19	10	1	18	5	13
Red pine	1	0	0	0	0	0	2	1	1	0	0	0	0
Jack pine	1	0	4	0	0	2	1	4	0	0	0	3	0
White spruce	7	6	2	0	9	8	6	4	13	8	0	7	16
Black spruce	1	0	6	0	0	2	0	1	0	0	0	0	0
Balsam fir	29	2	9	2	26	38	34	26	32	30	34	25	28
Tamarack	2	0	6	12	4	3	0	0	4	2	0	0	0
Northern white-cedar	7	3	0	0	7	5	2	2	7	10	34	12	38
Other softwoods	1	0	0	0	0	0	1	3	0	1	4	0	0
Total	57	13	33	14	49	62	51	61	67	52	90	52	95
Hardwoods:													
Select white oaks	51	23	7	13	28	28	57	76	75	61	60	41	40
Select red oaks	54	27	21	20	37	52	76	60	67	49	40	64	11
Other red oaks	2	0	6	0	0	7	0	1	1	2	0	0	0
Hickory	2	5	2	0	3	4	1	3	1	3	0	4	0
Yellow birch	5	0	0	0	2	11	2	1	14	1	9	7	0
Hard maple	123	17	27	30	116	78	148	101	156	107	236	185	245
Soft maple	28	4	27	12	31	25	34	33	19	26	34	36	14
Ash	78	25	26	49	70	64	77	108	91	70	87	80	115
Balsam poplar	14	6	6	0	5	16	13	12	10	35	17	18	14
Paper birch	67	19	26	51	91	96	87	63	53	45	54	53	15
Bigtooth aspen	8	0	1	2	7	8	14	8	13	2	4	2	0
Quaking aspen	54	31	47	66	92	69	54	65	32	18	64	15	75
Basswood	214	18	23	26	139	221	260	223	262	274	212	235	292
Elm	180	67	34	88	104	106	138	240	252	295	187	311	276
Select hardwoods	4	2	0	3	2	3	5	12	2	1	6	1	0
Other hardwoods	14	7	4	8	1	10	18	18	19	20	17	6	6
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	896	249	256	368	728	799	984	1,023	1,067	1,008	1,028	1,057	1,103
Total all species	952	263	289	382	777	861	1,036	1,084	1,134	1,061	1,118	1,109	1,198
Number of plots	858	22	36	29	62	126	162	137	110	63	50	42	19
Standard error	19	40	25	57	57	42	41	44	52	79	92	83	113
Average basal area	92	40	53	54	82	93	98	95	103	95	100	99	111

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 44.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Aspen forest type - Site index class 0-50

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	2	1	0	0	0	6	3	4	0	0	0	69	0
Red pine	9	0	0	0	28	2	0	75	7	13	0	29	0
Jack pine	7	10	3	2	0	2	9	34	0	0	0	0	0
White spruce	6	1	0	2	3	6	8	34	0	0	0	23	0
Black spruce	7	1	5	0	7	9	11	11	6	0	0	91	0
Balsam fir	30	1	8	33	31	27	42	74	32	208	46	0	72
Tamarack	3	1	1	0	0	0	12	0	0	16	0	0	0
Northern white-cedar	7	1	1	6	0	0	9	48	8	11	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	71	16	18	43	68	52	95	279	54	248	46	212	72
Hardwoods:													
Select white oaks	14	4	4	0	10	11	20	37	46	61	0	79	73
Select red oaks	11	0	0	0	13	23	16	35	16	7	0	13	54
Other red oaks	0	0	0	0	0	2	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	3	0	4	2	0	1	0	0	22	0	56	0	138
Soft maple	3	0	1	0	5	7	6	3	0	0	0	12	0
Ash	13	2	4	2	8	19	22	0	71	13	495	0	0
Balsam poplar	20	13	7	10	25	28	33	26	28	11	0	73	0
Paper birch	39	2	28	17	24	44	83	63	73	24	0	24	221
Bigtooth aspen	6	0	2	2	2	12	20	7	0	0	43	0	0
Quaking aspen	194	68	91	52	151	358	323	299	291	165	0	128	717
Basswood	8	0	2	0	5	9	12	2	42	0	0	0	493
Elm	8	1	3	0	2	17	23	8	5	7	0	0	76
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	1	0	0	0	0	2	0	0	0	17	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	321	91	145	85	245	531	557	480	594	306	595	327	1,772
Total all species	391	108	163	128	313	583	652	758	648	554	642	539	1,844
Number of plots	245	40	51	19	21	35	41	19	9	6	1	2	1
Standard error ^{3/}	24	23	21	28	71	50	51	104	106	157	R	64	R
Average basal area	56	26	40	38	57	76	73	86	83	72	75	75	142

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 45.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Aspen forest type - Site index class 51-60

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	7	8	1	2	4	9	8	10	6	48	0	0	0
Red pine	9	7	1	1	4	3	15	5	55	134	0	0	0
Jack pine	19	6	18	11	20	17	28	43	22	8	0	0	0
White spruce	11	5	5	3	14	4	25	18	37	0	0	0	0
Black spruce	9	1	2	8	16	9	5	38	18	7	0	0	0
Balsam fir	30	7	13	7	32	39	54	56	50	36	0	0	0
Tamarack	1	0	2	0	1	0	2	0	0	0	0	0	0
Northern white-cedar	3	1	6	1	3	1	3	4	2	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	89	35	49	32	96	81	140	174	190	233	0	0	0
Hardwoods:													
Select white oaks	16	6	6	8	18	24	25	30	14	30	0	0	0
Select red oaks	15	8	2	2	11	29	19	19	27	90	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	2	1	0	1	1	2	3	4	0	19	0	0	0
Soft maple	6	1	1	1	1	11	7	23	9	22	0	0	0
Ash	11	3	6	12	10	12	10	26	34	30	0	0	0
Balsam poplar	27	34	14	9	48	25	34	24	34	8	0	0	0
Paper birch	51	20	14	23	26	65	88	105	106	101	0	0	0
Bigtooth aspen	19	2	5	1	1	24	26	34	176	14	0	0	0
Quaking aspen	307	97	132	125	341	421	493	550	448	363	0	0	0
Basswood	6	0	4	4	2	17	9	3	5	30	0	0	0
Elm	13	4	2	5	5	20	22	19	35	61	0	0	0
Select hardwoods	0	0	0	0	0	0	0	1	0	0	0	0	0
Other hardwoods	1	0	1	0	6	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	476	176	187	190	471	651	737	839	889	767	0	0	0
Total all species	565	211	236	222	567	732	877	1,013	1,079	1,000	0	0	0
Number of plots	668	124	102	58	68	109	112	65	22	8	0	0	0
Standard error	19	26	16	19	39	29	47	70	102	248	0	0	0
Average basal area	62	28	46	47	70	75	81	94	94	92	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 46.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Aspen forest type - Site index class 61-70

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)										101-120	121+
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100		
Softwoods:													
White pine	9	11	6	1	2	3	18	8	13	85	0	0	0
Red pine	14	6	4	4	5	18	16	26	72	33	0	0	0
Jack pine	15	6	7	19	13	10	28	18	8	75	0	0	0
White spruce	13	5	6	5	9	5	20	30	46	29	164	0	0
Black spruce	7	3	1	4	3	3	10	17	44	27	0	0	0
Balsam fir	45	15	21	22	27	55	70	70	71	99	47	0	0
Tamarack	2	0	0	1	1	4	4	1	0	0	0	0	0
Northern white-cedar	5	1	2	2	1	5	5	23	0	48	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	109	47	46	57	60	102	170	193	254	396	212	0	0
Hardwoods:													
Select white oaks	20	10	12	11	23	29	23	13	19	20	0	0	0
Select red oaks	27	10	8	5	30	28	34	52	51	72	64	0	0
Other red oaks	0	0	0	0	2	0	1	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	2	0	0	0	0
Hard maple	6	2	3	1	7	6	6	13	11	17	55	0	0
Soft maple	7	4	2	2	5	11	10	7	15	4	0	0	0
Ash	16	8	8	13	19	15	15	39	23	13	0	0	0
Balsam poplar	35	12	20	23	30	39	59	35	48	50	17	0	0
Paper birch	88	29	33	43	71	118	127	112	149	78	193	0	0
Bigtooth aspen	27	2	0	0	10	45	52	41	27	0	0	0	0
Quaking aspen	472	101	156	245	437	590	679	699	710	987	909	0	0
Basswood	15	10	9	0	13	12	19	24	40	21	121	0	0
Elm	12	4	6	9	11	10	17	24	27	5	0	0	0
Select hardwoods	1	0	0	0	1	1	1	0	0	4	0	0	0
Other hardwoods	1	0	0	1	3	1	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	727	192	257	354	661	907	1,043	1,057	1,122	1,271	1,359	0	0
Total all species	836	239	303	411	722	1,009	1,214	1,250	1,376	1,667	1,571	0	0
Number of plots	1,135	154	107	82	154	270	225	93	35	11	4	0	0
Standard error	18	17	19	26	30	31	42	63	99	269	462	0	0
Average basal area	75	34	52	55	72	88	94	97	100	114	110	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 47.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

		Aspen forest type - Site index class 71-80											
		(In cubic feet per acre)											
		Stand-age class (years)											
Species	Average ^{2/}	0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	8	2	3	2	9	8	12	7	54	69	40	0	0
Red pine	16	12	2	10	7	22	25	29	0	119	0	0	0
Jack pine	19	7	9	27	22	22	13	8	57	79	0	0	0
White spruce	10	10	2	6	10	13	11	14	0	0	23	0	0
Black spruce	6	5	5	4	6	4	8	20	39	0	28	0	0
Balsam fir	63	17	21	32	51	85	79	118	161	99	258	0	0
Tamarack	4	4	3	4	6	3	3	0	0	0	0	0	0
Northern white-cedar	5	1	1	0	4	8	2	0	0	156	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	130	57	46	84	114	164	152	197	311	522	349	0	0
Hardwoods:													
Select white oaks	17	12	5	14	20	21	19	12	17	0	0	0	0
Select red oaks	30	9	10	19	30	35	43	35	141	8	0	0	0
Other red oaks	1	0	1	0	0	0	3	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	5	1	0	2	5	6	6	7	24	24	0	0	0
Soft maple	8	3	2	8	7	12	10	6	13	5	0	0	0
Ash	20	11	2	9	25	21	25	30	0	42	46	0	0
Balsam poplar	50	31	39	31	36	62	67	71	172	64	54	0	0
Paper birch	94	29	30	68	91	116	121	154	238	123	59	0	0
Bigtooth aspen	32	1	6	5	30	43	49	46	0	286	0	0	0
Quaking aspen	597	129	191	405	608	698	826	1,226	755	777	769	0	0
Basswood	15	7	10	8	13	20	22	6	10	5	0	0	0
Elm	14	8	7	9	9	18	22	28	0	0	55	0	0
Select hardwoods	1	0	0	2	0	1	0	0	0	0	0	0	0
Other hardwoods	1	0	5	1	1	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	883	241	308	580	875	1,053	1,212	1,620	1,369	1,333	983	0	0
Total all species	1,013	297	354	664	989	1,217	1,365	1,816	1,681	1,855	1,331	0	0
Number of plots	954	94	78	82	215	267	164	34	8	8	4	0	0
Standard error	22	20	26	54	28	32	42	309	211	252	208	0	0
Average basal area	82	33	53	69	82	93	101	113	116	126	98	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 48.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Aspen forest type - Site index class 81-90

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	9	3	6	12	10	8	6	26	0	0	111	0	0
Red pine	14	0	0	20	19	6	13	66	0	0	0	0	0
Jack pine	16	0	5	15	27	16	6	8	42	0	0	0	0
White spruce	8	4	0	6	8	7	16	25	0	0	0	0	0
Black spruce	8	27	0	4	6	3	10	20	77	0	0	0	0
Balsam fir	75	29	39	65	70	97	75	109	156	0	0	0	0
Tamarack	2	0	0	5	2	2	4	0	0	0	0	0	0
Northern white-cedar	2	0	0	0	6	1	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	135	63	50	126	148	141	131	254	275	0	111	0	0
Hardwoods:													
Select white oaks	15	7	14	23	15	11	24	15	13	0	0	0	0
Select red oaks	25	3	3	20	31	28	35	0	0	0	0	248	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	3	0	0	0	0	0	0	0	0	0	0
Hard maple	7	0	0	7	9	2	15	5	0	0	175	0	0
Soft maple	12	6	41	9	7	13	17	0	0	0	0	0	0
Ash	26	0	13	14	32	17	52	47	43	0	0	0	0
Balsam poplar	61	50	22	35	68	52	82	164	128	0	0	0	0
Paper birch	98	60	112	69	112	110	89	24	40	0	0	971	0
Bigtooth aspen	46	4	0	6	25	86	86	4	117	0	0	0	0
Quaking aspen	814	150	244	608	802	1,030	1,023	1,045	914	0	1,551	268	0
Basswood	21	4	50	30	12	19	30	41	0	0	229	0	0
Elm	16	3	10	9	18	19	26	5	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	1	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,142	287	513	830	1,132	1,386	1,481	1,350	1,254	0	1,955	1,487	0
Total all species	1,277	350	563	956	1,280	1,526	1,612	1,604	1,529	0	2,066	1,487	0
Number of plots	420	25	21	56	121	119	58	14	4	0	1	1	0
Standard error ^{3/}	34	56	45	63	47	59	101	255	472	0	R	R	0
Average basal area	93	37	73	83	94	101	108	104	107	0	165	109	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 49.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Aspen forest type - Site index class 91-100

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	12	0	0	18	2	5	12	152	37	0	0	0	0
Red pine	10	0	0	0	23	11	0	0	0	0	0	0	0
Jack pine	14	0	57	0	25	7	27	0	0	0	0	0	0
White spruce	47	60	0	0	46	63	81	152	0	0	0	0	0
Black spruce	13	0	0	36	0	26	0	0	0	0	0	0	0
Balsam fir	103	0	0	122	66	175	112	42	85	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	11	0	0	0	0	10	31	175	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	209	60	57	176	162	296	264	521	121	0	0	0	0
Hardwoods:													
Select white oaks	23	0	16	61	15	12	10	146	0	0	0	0	0
Select red oaks	35	0	0	24	14	71	70	17	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	11	0	0	4	9	10	21	0	66	0	0	0	0
Soft maple	12	27	0	9	13	16	0	0	22	0	0	0	0
Ash	64	0	0	18	93	28	98	136	231	0	192	0	0
Balsam poplar	118	14	0	63	149	162	98	0	162	0	113	0	0
Paper birch	123	73	142	169	139	114	52	44	220	0	0	0	0
Bigtooth aspen	31	0	0	0	20	42	32	394	0	0	0	0	0
Quaking aspen	990	492	366	938	904	1,239	1,039	879	1,279	0	752	0	0
Basswood	23	0	0	24	38	20	20	0	0	0	34	0	0
Elm	36	0	0	6	47	26	127	0	0	0	62	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,468	606	524	1,315	1,440	1,740	1,569	1,616	1,980	0	1,154	0	0
Total all species	1,677	666	581	1,490	1,603	2,036	1,833	2,137	2,101	0	1,154	0	0
Number of plots	74	4	2	12	22	20	8	2	3	0	1	0	0
Standard error ^{3/}	84	116	353	215	127	130	251	61	747	0	R	0	0
Average basal area	108	74	57	109	103	119	117	115	129	0	109	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 50.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Aspen forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	8	7	3	4	6	6	12	10	14	57	25	46	0
Red pine	13	7	2	7	10	14	17	27	47	75	0	19	0
Jack pine	16	6	10	17	20	15	20	24	17	46	0	0	0
White spruce	11	6	4	5	11	9	18	25	30	10	68	15	0
Black spruce	7	4	2	6	6	5	9	23	32	11	10	60	0
Balsam fir	51	12	18	34	47	70	68	76	75	103	115	0	72
Tamarack	2	1	1	2	3	2	4	0	0	3	0	0	0
Northern white-cedar	4	1	3	1	3	5	4	16	1	56	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	114	44	43	76	105	128	152	202	216	360	218	141	72
Hardwoods:													
Select white oaks	18	8	8	15	19	22	22	21	20	25	0	52	73
Select red oaks	24	8	5	11	27	31	33	35	45	49	23	91	54
Other red oaks	0	0	0	0	0	0	1	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	1	0	0	0	0
Hard maple	5	1	1	3	6	5	6	8	12	16	41	0	138
Soft maple	8	3	4	5	6	12	10	11	11	8	0	8	0
Ash	18	6	6	11	25	17	22	32	38	24	79	0	0
Balsam poplar	42	24	20	25	46	49	57	44	62	36	36	48	0
Paper birch	81	26	32	54	82	106	111	106	135	85	91	340	221
Bigtooth aspen	28	2	3	3	19	46	47	38	65	73	4	0	0
Quaking aspen	507	109	154	346	568	672	698	725	628	635	820	174	717
Basswood	14	5	9	9	12	17	18	14	24	16	68	0	493
Elm	13	5	5	7	12	16	22	20	22	18	26	0	76
Select hardwoods	0	0	0	0	0	1	1	0	0	1	0	0	0
Other hardwoods	1	0	1	0	2	1	0	0	0	3	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	759	198	249	490	825	994	1,048	1,054	1,063	988	1,188	714	1,772
Total all species	872	242	292	566	930	1,122	1,201	1,256	1,279	1,349	1,406	855	1,844
Number of plots	3,496	441	361	309	601	820	608	227	81	33	11	3	1
Standard error ^{3/}	11	12	11	28	21	20	26	62	73	150	198	318	R
Average basal area	76	32	50	63	81	90	93	98	99	104	107	86	142

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 51.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Paper birch forest type - Site index class 0-50

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	12	0	0	0	4	3	20	50	23	0	0	0	0
Red pine	8	0	0	0	14	0	4	6	48	10	0	0	0
Jack pine	8	0	0	0	0	0	18	19	33	0	0	0	0
White spruce	18	0	13	0	14	37	24	6	49	7	0	0	0
Black spruce	13	0	0	16	22	26	8	22	0	33	0	0	0
Balsam fir	61	10	48	55	70	69	36	92	134	43	97	0	0
Tamarack	5	0	4	0	5	0	19	0	0	0	0	0	0
Northern white-cedar	13	31	4	0	31	4	3	11	0	61	0	0	0
Other softwoods	1	0	0	0	0	0	6	0	0	0	0	0	0
Total	140	41	70	70	161	138	136	206	287	155	97	0	0
Hardwoods:													
Select white oaks	9	0	0	7	3	10	0	17	28	37	0	0	0
Select red oaks	10	17	6	0	3	10	12	0	18	22	0	108	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	1	0	0	0	0	0	5	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	2	0	2	0	0	0	8	0	0	0	0	0	0
Soft maple	3	0	6	0	0	0	7	0	0	12	0	0	0
Ash	21	0	3	0	5	54	29	39	11	38	0	0	0
Balsam poplar	9	0	3	16	0	10	9	23	11	20	0	0	0
Paper birch	212	47	59	81	238	299	314	313	238	181	20	86	0
Bigtooth aspen	4	0	0	0	0	20	2	0	0	0	50	0	0
Quaking aspen	73	22	31	85	71	139	96	82	71	29	23	0	0
Basswood	6	0	0	0	0	28	7	2	13	0	0	0	0
Elm	10	0	13	12	6	6	6	1	6	22	129	0	0
Select hardwoods	1	0	0	0	4	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	361	86	123	201	331	577	495	476	395	360	222	194	0
Total all species	501	127	193	272	492	715	632	682	681	515	319	194	0
Number of plots	103	6	16	5	13	13	20	11	9	7	2	1	0
Standard error ^{3/}	35	34	29	57	117	87	66	107	108	129	125	R	0
Average basal area	67	24	48	62	68	85	77	72	80	67	83	23	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 52.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Paper birch forest type - Site index class 51-60

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	13	12	22	15	14	5	20	14	16	0	0	0	0
Red pine	18	0	10	0	0	14	23	5	100	9	46	0	0
Jack pine	11	0	0	9	5	20	8	11	17	0	0	0	0
White spruce	23	15	0	0	20	12	33	16	76	26	35	0	0
Black spruce	4	28	0	0	0	6	4	5	0	0	0	0	0
Balsam fir	97	20	10	21	78	82	120	98	82	216	343	65	0
Tamarack	3	0	10	0	4	3	4	0	0	0	0	0	0
Northern white-cedar	14	0	0	0	4	8	5	5	41	79	43	164	0
Other softwoods	1	0	0	0	0	0	2	0	0	0	0	0	0
Total	182	74	52	45	126	149	218	154	332	329	466	229	0
Hardwoods:													
Select white oaks	8	0	0	10	2	5	5	16	0	47	42	13	0
Select red oaks	23	0	0	7	14	27	24	52	15	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	2	0	0	0	0	0	0	17	0	0	0	0	0
Yellow birch	0	0	0	0	3	0	0	0	0	0	0	0	0
Hard maple	11	35	0	0	4	15	9	11	19	0	0	36	0
Soft maple	15	20	23	13	4	29	11	9	6	9	19	0	0
Ash	31	10	0	0	23	20	29	40	51	86	61	128	0
Balsam poplar	19	6	15	7	32	19	18	2	15	47	138	79	0
Paper birch	474	193	126	229	313	520	464	553	645	728	427	547	0
Bigtooth aspen	7	0	6	37	0	5	4	12	9	0	0	36	0
Quaking aspen	125	0	18	106	131	107	159	101	166	239	94	32	0
Basswood	17	0	0	0	3	15	16	26	0	38	75	107	0
Elm	13	0	0	15	3	16	5	21	25	18	30	54	0
Select hardwoods	0	0	0	0	4	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	746	263	189	424	535	777	743	859	951	1,213	885	1,032	0
Total all species	928	337	241	468	660	927	961	1,013	1,283	1,541	1,352	1,261	0
Number of plots	200	5	9	7	15	52	57	28	12	10	2	3	0
Standard error	36	72	52	112	65	61	62	75	191	194	95	113	0
Average basal area	87	71	47	58	71	89	90	93	102	115	102	96	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 53.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Paper birch forest type - Site index class 61-70

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	17	0	0	14	6	9	24	27	54	0	0	0	0
Red pine	33	0	18	0	27	15	52	44	86	14	0	0	0
Jack pine	10	0	14	0	34	5	5	14	7	0	0	0	0
White spruce	12	13	15	0	3	11	12	15	39	14	0	0	0
Black spruce	5	0	0	0	0	1	5	21	0	0	0	0	0
Balsam fir	79	14	52	0	46	85	79	95	98	180	447	0	0
Tamarack	4	0	0	0	24	1	1	0	0	0	0	0	0
Northern white-cedar	16	0	11	0	11	5	14	4	38	255	85	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	176	27	110	14	150	133	192	220	321	464	532	0	0
Hardwoods:													
Select white oaks	9	0	15	6	8	6	12	12	4	15	0	0	0
Select red oaks	47	0	0	73	31	41	59	70	47	59	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	3	0	0	0	0	3	4	0	17	14	0	0	0
Hard maple	12	0	0	0	9	14	4	18	35	38	0	0	0
Soft maple	18	7	0	0	4	18	34	12	28	0	0	0	0
Ash	26	0	0	38	19	34	11	20	48	68	0	253	0
Balsam poplar	28	13	0	32	19	41	28	19	11	30	177	0	0
Paper birch	591	179	248	325	545	616	664	632	580	666	287	835	0
Bigtooth aspen	15	0	0	0	14	19	16	7	12	77	0	0	0
Quaking aspen	135	14	91	86	98	125	173	161	137	127	200	318	0
Basswood	22	0	0	0	14	25	25	31	22	11	69	0	0
Elm	22	0	0	0	21	30	16	24	19	18	59	0	0
Select hardwoods	0	0	0	0	0	0	1	2	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	928	212	355	560	784	973	1,047	1,007	959	1,122	791	1,406	0
Total all species	1,105	239	465	574	933	1,106	1,239	1,227	1,281	1,586	1,323	1,406	0
Number of plots	226	5	6	6	32	71	53	32	13	6	1	1	0
Standard error ^{3/}	35	85	136	141	91	53	62	103	145	202	R	R	0
Average basal area	92	60	65	85	83	91	98	94	98	107	105	116	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 54.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Paper birch forest type - Site index class 71-80

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	10	0	0	0	0	11	7	70	0	0	0	0	0
Red pine	61	0	0	0	8	39	12	133	680	0	0	0	0
Jack pine	19	0	0	0	0	2	94	0	0	0	0	0	0
White spruce	23	0	55	0	0	25	27	0	58	0	44	0	0
Black spruce	2	0	39	0	0	0	0	0	0	0	0	0	0
Balsam fir	110	0	95	0	94	63	185	117	227	0	262	0	0
Tamarack	1	0	0	82	0	0	0	0	0	0	0	0	0
Northern white-cedar	13	0	0	0	0	0	0	63	94	0	143	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	239	0	189	82	102	139	325	382	1,059	0	449	0	0
Hardwoods:													
Select white oaks	15	0	0	0	8	13	26	37	25	0	0	0	0
Select red oaks	40	0	0	0	80	61	0	0	0	0	0	0	0
Other red oaks	1	0	0	0	0	2	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	2	0	0	0	0	0	0	0	44	0	0	0	0
Hard maple	12	0	0	0	5	14	16	0	49	0	0	0	0
Soft maple	20	0	0	0	5	20	50	9	0	0	0	0	0
Ash	31	0	0	0	24	25	39	20	0	0	232	0	0
Balsam poplar	81	0	0	281	117	61	53	150	14	0	307	0	0
Paper birch	646	0	217	0	425	740	646	610	970	0	1,168	0	0
Bigtooth aspen	12	0	0	0	30	14	6	0	0	0	0	0	0
Quaking aspen	168	0	75	70	226	165	189	182	92	0	46	0	0
Basswood	17	0	0	0	15	18	9	0	100	0	0	0	0
Elm	25	0	0	0	8	38	20	32	0	0	41	0	0
Select hardwoods	1	0	0	0	0	2	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,072	0	291	351	943	1,172	1,054	1,040	1,294	0	1,795	0	0
Total all species	1,310	0	480	433	1,045	1,311	1,379	1,423	2,353	0	2,244	0	0
Number of plots	63	0	3	1	11	27	12	4	3	0	2	0	0
Standard error ^{3/}	81	0	167	R	128	92	171	260	847	0	210	0	0
Average basal area	97	0	50	41	87	103	99	93	133	0	126	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 55.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Paper birch forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	15	3	10	10	6	8	21	35	30	0	0	0	0
Red pine	28	0	6	0	15	23	30	28	129	11	13	0	0
Jack pine	11	0	2	3	15	9	16	13	16	0	0	0	0
White spruce	18	8	13	0	7	15	23	13	55	17	23	0	0
Black spruce	5	8	3	4	4	4	5	14	0	10	0	0	0
Balsam fir	86	13	43	22	72	80	98	95	112	154	264	39	0
Tamarack	3	0	5	4	11	2	5	0	0	0	0	0	0
Northern white-cedar	14	11	4	0	11	5	7	8	34	119	65	98	0
Other softwoods	0	0	0	0	0	0	2	0	0	0	0	0	0
Total	180	44	86	44	141	145	206	206	376	311	365	137	0
Hardwoods:													
Select white oaks	10	0	3	7	10	7	9	15	10	36	12	8	0
Select red oaks	31	6	3	25	28	37	33	49	26	22	0	22	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	1	0	0	0	0	0	1	6	0	0	0	0	0
Yellow birch	1	0	0	0	0	1	1	0	9	4	0	0	0
Hard maple	10	10	1	0	7	13	7	11	22	10	0	22	0
Soft maple	15	10	9	5	3	21	23	9	12	8	5	0	0
Ash	27	3	1	12	22	30	23	30	36	67	84	127	0
Balsam poplar	28	5	5	32	38	35	23	20	12	34	152	47	0
Paper birch	493	136	130	209	439	582	533	555	550	545	502	512	0
Bigtooth aspen	10	0	2	14	14	14	8	7	7	20	14	22	0
Quaking aspen	126	12	46	92	122	132	158	126	127	146	75	83	0
Basswood	17	0	0	0	15	21	17	23	19	19	31	64	0
Elm	17	0	6	9	15	25	11	20	16	19	66	32	0
Select hardwoods	0	0	0	0	2	0	0	1	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	788	182	206	404	715	918	848	872	846	929	942	939	0
Total all species	968	226	292	448	856	1,063	1,054	1,079	1,223	1,241	1,307	1,076	0
Number of plots	603	17	35	19	77	165	142	76	37	23	7	5	0
Standard error ^{3/}	23	39	39	65	57	38	42	59	122	145	303	231	0
Average basal area	87	49	51	67	80	92	92	90	98	98	104	86	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 56.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Balsam poplar forest type - Site index class 0-50

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	1	0	0	0	0	0	0	0	12	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	7	0	0	0	0	46	0	0	0	0	0	0	0
White spruce	6	0	0	0	6	16	26	0	0	0	0	0	0
Black spruce	2	0	0	0	4	0	0	0	18	0	0	0	0
Balsam fir	25	0	5	0	0	24	86	11	195	0	0	0	0
Tamarack	2	0	0	0	0	0	0	0	0	138	0	0	0
Northern white-cedar	1	0	0	0	0	0	0	0	16	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	44	0	5	0	10	86	112	11	240	138	0	0	0
Hardwoods:													
Select white oaks	1	0	3	0	2	0	0	0	4	0	0	0	0
Select red oaks	1	0	0	0	0	0	0	0	14	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	5	0	0	0	0	0	0
Ash	17	0	5	0	3	33	0	33	128	0	0	0	0
Balsam poplar	209	176	66	71	168	345	392	336	427	198	0	0	0
Paper birch	24	0	0	6	16	9	38	12	208	109	0	0	0
Bigtooth aspen	1	0	0	0	0	0	0	0	17	0	0	0	0
Quaking aspen	70	41	46	65	76	99	110	156	19	0	0	0	0
Basswood	6	0	0	0	0	38	0	0	0	0	0	0	0
Elm	7	0	0	0	11	7	0	4	36	90	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	1	0	4	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	338	217	123	143	277	531	545	542	853	397	0	0	0
Total all species	382	217	128	143	287	618	657	553	1,093	535	0	0	0
Number of plots	76	9	15	9	15	12	6	4	5	1	0	0	0
Standard error ^{3/}	39	76	36	36	49	87	82	87	117	R	0	0	0
Average basal area	51	25	35	34	48	70	65	62	108	56	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 57.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Balsam poplar forest type - Site index class 51-60

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	1	0	0	0	0	0	6	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	1	0	0	0	0	0	0	15	0	0	0	0	0
White spruce	7	4	19	0	0	3	11	9	12	0	0	0	0
Black spruce	6	6	0	0	0	11	18	0	0	0	0	0	0
Balsam fir	47	7	9	0	17	89	39	172	34	56	0	0	0
Tamarack	4	0	8	0	0	0	0	0	40	0	0	0	0
Northern white-cedar	8	0	8	0	3	20	9	0	7	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	73	18	44	0	20	122	83	196	92	56	0	0	0
Hardwoods:													
Select white oaks	2	8	0	0	0	3	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	2	0	0	0	0	0	0	0	0	159	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	36	4	0	0	4	68	38	68	77	369	0	0	0
Balsam poplar	329	133	64	375	284	517	525	290	410	493	0	0	0
Paper birch	32	3	0	17	29	55	50	37	12	315	0	0	0
Bigtooth aspen	1	0	0	0	0	4	0	0	0	0	0	0	0
Quaking aspen	67	38	24	60	106	65	82	106	89	62	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	16	15	11	0	23	20	15	8	26	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	1	0	0	0	3	0	3	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	485	200	99	452	448	732	713	510	614	1,397	0	0	0
Total all species	559	218	142	452	468	854	796	706	707	1,453	0	0	0
Number of plots	92	14	14	3	13	21	13	7	6	1	0	0	0
Standard error ^{3/}	49	48	28	177	57	119	139	207	109	R	0	0	0
Average basal area	61	32	33	77	64	83	72	64	56	124	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.Minnesota State Total
Balsam Poplar
Site Index 51-60

Table 58.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Balsam poplar forest type - Site index class 61-70

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	1	0	0	0	0	3	0	0	0	0	0	0	0
Red pine	1	0	0	6	0	0	0	0	0	0	0	0	0
Jack pine	1	5	0	0	0	0	0	0	0	0	0	0	0
White spruce	11	21	0	0	0	4	25	11	35	45	0	0	0
Black spruce	5	10	0	0	3	14	6	0	0	0	0	0	0
Balsam fir	74	33	4	12	79	105	84	133	183	107	0	0	0
Tamarack	22	0	11	0	0	28	43	60	0	0	0	0	0
Northern white-cedar	24	0	2	0	46	10	38	47	99	0	0	0	0
Other softwoods	1	0	0	0	0	4	0	0	0	0	0	0	0
Total	138	69	17	18	129	168	197	250	317	152	0	0	0
Hardwoods:													
Select white oaks	3	0	8	0	3	0	5	0	15	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	4	0	0	4	0	11	0	9	0	0	0	0	0
Soft maple	0	0	0	0	3	0	0	0	0	0	0	0	0
Ash	44	14	7	16	47	26	24	87	264	258	166	0	0
Balsam poplar	410	58	156	180	464	503	515	703	588	654	869	0	0
Paper birch	49	12	18	5	59	94	19	104	82	73	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	93	67	52	67	152	95	105	140	16	140	0	0	0
Basswood	5	5	0	0	0	0	12	0	14	97	0	0	0
Elm	27	6	8	8	32	14	32	48	73	208	64	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	634	161	248	280	760	743	711	1,091	1,051	1,431	1,098	0	0
Total all species	772	230	266	298	889	911	908	1,342	1,368	1,582	1,098	0	0
Number of plots	119	11	17	11	13	24	23	12	5	2	1	0	0
Standard error ^{3/}	49	63	62	37	92	107	80	100	308	48	R	0	0
Average basal area	68	22	40	49	81	78	69	106	102	111	120	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 59 --Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Balsam poplar forest type - Site index class 71-80

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	2	0	0	0	0	0	11	0	0	0	0	0	0
Red pine	3	0	0	0	0	0	20	0	0	0	0	0	0
Jack pine	2	0	0	0	0	0	16	0	0	0	0	0	0
White spruce	14	19	13	0	14	25	0	0	0	79	0	0	0
Black spruce	1	7	0	0	2	0	0	0	0	0	0	0	0
Balsam fir	100	18	14	66	89	126	239	50	0	163	0	0	0
Tamarack	1	0	0	0	2	0	0	0	0	0	0	0	0
Northern white-cedar	14	0	0	20	0	0	0	0	0	858	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	137	44	26	86	107	150	286	50	0	1,100	0	0	0
Hardwoods:													
Select white oaks	10	0	4	59	4	0	20	0	0	0	0	0	0
Select red oaks	4	0	0	0	5	9	5	0	0	0	0	0	0
Other red oaks	1	0	0	0	0	5	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	7	0	0	0	21	0	12	19	0	0	0	0	0
Soft maple	2	0	0	0	7	0	0	0	0	0	0	0	0
Ash	32	36	6	60	0	45	41	74	0	194	0	0	0
Balsam poplar	566	135	112	436	464	917	797	1,256	0	849	0	0	0
Paper birch	57	10	18	43	94	50	86	0	0	216	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	139	10	60	106	131	213	227	165	0	0	0	0	0
Basswood	8	10	0	10	12	0	13	30	0	0	0	0	0
Elm	49	0	53	10	22	76	64	274	0	0	0	0	0
Select hardwoods	1	0	0	0	0	3	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	874	201	253	723	759	1,318	1,265	1,818	0	1,259	0	0	0
Total all species	1,011	245	280	809	866	1,469	1,551	1,868	0	2,360	0	0	0
Number of plots	69	8	9	6	16	17	10	2	0	1	0	0	0
Standard error ^{3/}	81	75	73	157	88	142	151	311	0	R	0	0	0
Average basal area	76	24	38	81	72	99	103	105	0	165	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 60.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Minnesota, 1977^{1/}

Balsam poplar forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	1	0	0	0	0	1	3	0	3	0	0	0	0
Red pine	1	0	0	2	0	0	4	0	0	0	0	0	0
Jack pine	2	1	0	0	0	6	3	4	0	0	0	0	0
White spruce	10	11	7	0	7	10	16	11	14	34	0	0	0
Black spruce	5	6	0	0	2	11	7	0	5	0	0	0	0
Balsam fir	72	13	7	17	52	126	114	114	140	86	0	0	0
Tamarack	8	0	5	0	1	8	18	26	13	28	0	0	0
Northern white-cedar	12	0	3	4	10	8	19	20	34	172	0	0	0
Other softwoods	0	0	0	0	0	1	0	0	0	0	0	0	0
Total	111	31	22	23	72	171	183	175	209	319	0	0	0
Hardwoods:													
Select white oaks	3	2	4	11	2	1	6	2	5	0	0	0	0
Select red oaks	2	0	0	0	1	2	1	0	21	0	0	0	0
Other red oaks	0	0	0	0	0	1	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	32	0	0	0
Hard maple	3	0	0	2	5	3	2	5	7	0	0	0	0
Soft maple	1	0	0	0	2	1	1	0	0	0	0	0	0
Ash	39	11	4	22	21	50	35	86	134	216	166	0	0
Balsam poplar	409	120	101	238	397	615	579	641	482	570	869	0	0
Paper birch	45	6	9	24	56	65	46	58	104	157	0	0	0
Bigtooth aspen	1	0	0	0	0	1	2	0	5	0	0	0	0
Quaking aspen	111	38	44	92	139	151	122	208	63	68	0	0	0
Basswood	4	3	0	2	3	5	7	2	4	39	0	0	0
Elm	25	6	14	10	22	31	30	43	50	101	64	0	0
Select hardwoods	0	0	0	0	0	1	0	0	0	0	0	0	0
Other hardwoods	0	0	1	0	1	0	1	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	643	186	177	400	650	926	831	1,045	874	1,183	1,098	0	0
Total all species	753	217	199	423	722	1,097	1,014	1,220	1,083	1,502	1,098	0	0
Number of plots	389	45	55	31	65	85	56	28	18	5	1	0	0
Standard error ^{3/}	32	29	27	68	57	72	71	135	116	291	R	0	0
Average basal area	67	26	37	56	70	87	76	91	90	113	120	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 61.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}

Jack pine forest type - Site index class 0-50

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	54	0	31	0	0	569	0	14	0	0	209	0	0
Red pine	8	0	0	0	0	0	0	0	0	65	71	0	0
Jack pine	393	0	0	234	1,529	0	347	462	0	639	335	503	0
White spruce	4	0	0	0	0	0	0	0	0	0	0	29	0
Black spruce	79	0	0	0	0	0	0	51	0	457	57	272	0
Balsam fir	15	0	0	0	0	0	0	42	0	77	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	553	0	31	234	1,529	569	347	569	0	1,238	672	804	0
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	7	0	0	0	0	0	52	0	0	0	0	0	0
Ash	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam poplar	0	0	0	0	0	0	0	0	0	0	0	0	0
Paper birch	36	0	119	0	0	0	0	34	0	142	0	88	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	103	82	0	44	0	262	105	204	0	49	0	55	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	146	82	119	44	0	262	157	238	0	191	0	143	0
Total all species	699	82	150	278	1,529	832	504	807	0	1,428	672	947	0
Number of plots	16	2	1	1	1	1	2	4	0	1	1	2	0
Standard error ^{3/}	114	82	R	R	R	R	132	160	0	R	R	163	0
Average basal area	74	36	23	45	130	70	88	74	0	128	60	90	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 62.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}

Jack pine forest type - Site index class 51-60

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	1	0	0	0	0	3	0	0	0	0	0	0	0
Red pine	40	0	0	0	0	21	67	101	0	0	0	0	0
Jack pine	1,312	660	0	0	875	799	1,868	1,999	1,094	1,479	495	0	0
White spruce	7	0	0	0	0	8	8	0	115	0	0	0	0
Black spruce	95	0	0	0	0	85	17	256	0	135	627	0	0
Balsam fir	23	0	0	0	15	42	20	12	45	71	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,477	660	0	0	890	958	1,980	2,368	1,254	1,684	1,122	0	0
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	6	0	0	0	0	0	23	0	0	0	0	0	0
Ash	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam poplar	0	0	0	0	0	0	0	0	0	0	0	0	0
Paper birch	17	0	0	0	0	7	6	0	0	50	439	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	155	111	0	0	0	217	76	386	53	0	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	178	111	0	0	0	224	104	386	53	50	439	0	0
Total all species	1,655	771	0	0	890	1,182	2,084	2,755	1,307	1,734	1,561	0	0
Number of plots	37	5	0	0	4	8	9	7	1	2	1	0	0
Standard error ^{3/}	209	577	0	0	158	275	443	583	R	158	R	0	0
Average basal area	91	61	0	0	66	77	102	119	112	122	90	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 63.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}

Jack pine forest type - Site index class 61-70

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Red pine	7	0	0	0	34	0	0	0	0	0	0	0	0
Jack pine	897	0	0	412	686	1,315	1,277	972	0	968	0	0	0
White spruce	16	0	0	0	76	0	0	0	0	0	0	0	0
Black spruce	70	0	0	0	80	41	164	0	0	0	0	0	0
Balsam fir	63	0	0	212	132	32	0	0	0	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,054	0	0	624	1,008	1,389	1,441	972	0	968	0	0	0
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam poplar	0	0	0	0	0	0	0	0	0	0	0	0	0
Paper birch	41	0	0	0	12	39	115	0	0	0	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	217	50	0	0	134	345	265	126	0	713	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	258	50	0	0	145	384	380	126	0	713	0	0	0
Total all species	1,312	50	0	624	1,153	1,773	1,821	1,098	0	1,681	0	0	0
Number of plots	14	1	0	2	3	2	4	1	0	1	0	0	0
Standard error ^{3/}	183	R	0	258	321	163	297	R	0	R	0	0	0
Average basal area	95	8	0	61	112	113	115	71	0	110	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.Aspen-Birch Unit
Jack Pine
Site Index 61-70

Table 64.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}

Jack pine forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	12	0	31	0	0	35	0	5	0	0	105	0	0
Red pine	26	0	0	0	35	10	40	59	0	16	35	0	0
Jack pine	1,073	413	0	353	858	1,211	1,507	1,401	1,094	1,141	415	503	0
White spruce	9	0	0	0	34	7	5	0	115	0	0	29	0
Black spruce	88	0	0	0	24	93	54	167	0	182	342	272	0
Balsam fir	29	0	0	141	46	36	12	21	45	55	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,237	413	31	494	997	1,392	1,618	1,652	1,254	1,393	897	804	0
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	5	0	0	0	0	2	21	0	0	0	0	0	0
Ash	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam poplar	0	0	0	0	0	0	0	0	0	0	0	0	0
Paper birch	27	0	119	0	11	17	34	11	0	60	220	88	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	160	96	0	15	108	212	130	304	53	190	0	55	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	192	96	119	15	120	231	185	315	53	251	220	143	0
Total all species	1,429	509	150	509	1,116	1,623	1,803	1,967	1,307	1,644	1,116	947	0
Number of plots	75	8	1	3	10	17	15	12	1	4	2	2	0
Standard error ^{3/}	125	368	R	189	136	219	303	436	R	98	445	163	0
Average basal area	90	48	23	56	90	93	104	100	112	120	75	90	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 65.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}

Red pine forest type - Site index class 51-60

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	203	0	0	0	42	344	205	154	219	393	519	0	0
Red pine	1,135	789	80	0	1,097	1,176	372	908	2,084	1,353	1,256	0	0
Jack pine	114	0	30	0	546	94	0	0	93	143	0	0	0
White spruce	22	0	0	0	54	0	0	0	40	0	149	0	0
Black spruce	12	0	0	0	0	0	0	247	0	0	0	0	0
Balsam fir	30	0	12	0	0	64	93	92	43	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	8	0	0	0	0	0	0	69	19	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,524	789	122	0	1,738	1,678	669	1,470	2,497	1,889	1,923	0	0
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam poplar	0	0	0	0	0	0	0	0	0	0	0	0	0
Paper birch	68	0	0	0	0	122	0	0	203	19	0	0	0
Bigtooth aspen	4	0	0	0	0	0	0	0	15	0	0	0	0
Quaking aspen	105	154	0	0	0	67	138	59	170	266	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	177	154	0	0	0	189	138	59	388	285	0	0	0
Total all species	1,701	943	122	0	1,738	1,867	807	1,529	2,885	2,174	1,923	0	0
Number of plots	21	1	4	0	2	3	1	1	5	3	1	0	0
Standard error ^{3/}	277	R	70	0	545	251	R	R	711	555	R	0	0
Average basal area	109	75	28	0	151	157	79	105	149	89	142	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.Aspen-Birch Unit
Red Pine
Site Index 51-60

Table 66.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}Aspen-Birch Unit
Red Pine
Site Index All Classes

Red pine forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	146	0	0	0	26	270	217	51	219	279	519	0	0
Red pine	1,134	789	64	792	1,205	969	1,856	494	2,084	1,328	1,256	686	0
Jack pine	86	0	24	0	182	107	48	62	93	102	0	0	0
White spruce	41	0	0	62	101	8	54	60	40	0	149	0	0
Black spruce	15	0	0	0	19	16	0	82	0	18	0	0	0
Balsam fir	39	0	10	0	81	46	39	31	43	0	0	184	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	4	0	0	0	0	0	0	23	19	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,465	789	98	854	1,613	1,417	2,212	804	2,497	1,727	1,923	870	0
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam poplar	0	0	0	0	0	0	0	0	0	0	0	0	0
Paper birch	59	0	0	0	85	116	0	0	203	12	0	0	0
Bigtooth aspen	2	0	0	0	0	0	0	0	15	0	0	0	0
Quaking aspen	103	154	0	246	41	91	115	20	170	239	0	197	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	164	154	0	246	126	206	115	20	388	250	0	197	0
Total all species	1,629	943	98	1,100	1,739	1,623	2,327	823	2,885	1,977	1,923	1,067	0
Number of plots	38	1	5	1	7	5	4	3	5	5	1	1	0
Standard error ^{3/}	199	R	60	R	318	244	871	353	711	496	R	R	0
Average basal area	106	75	30	120	126	133	124	81	149	90	142	71	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 67.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}

White pine forest type - Site index class 0-50

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	684	0	0	0	0	0	0	860	558	352	736	913	0
Red pine	156	0	0	0	0	0	0	385	354	122	48	0	0
Jack pine	106	0	0	0	0	0	0	236	534	29	0	0	0
White spruce	124	0	0	0	0	0	0	113	0	0	254	0	0
Black spruce	24	0	0	0	0	0	0	0	0	36	43	0	0
Balsam fir	71	0	0	0	0	0	0	25	0	0	156	38	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	15	0	0	0	0	0	0	0	0	0	38	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,181	0	0	0	0	0	0	1,618	1,446	538	1,275	951	0
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	11	0	0	0	0	0	0	26	0	0	13	0	0
Ash	6	0	0	0	0	0	0	28	0	0	0	0	0
Balsam poplar	0	0	0	0	0	0	0	0	0	0	0	0	0
Paper birch	42	0	0	0	0	0	0	0	0	102	55	0	0
Bigtooth aspen	4	0	0	0	0	0	0	0	0	18	0	0	0
Quaking aspen	201	0	0	0	0	0	0	183	1,175	57	88	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	263	0	0	0	0	0	0	236	1,175	178	156	0	0
Total all species	1,444	0	0	0	0	0	0	1,855	2,622	715	1,431	951	0
Number of plots	10	0	0	0	0	0	0	2	1	2	4	1	0
Standard error ^{3/}	245	0	0	0	0	0	0	335	R	28	424	R	0
Average basal area	110	0	0	0	0	0	0	124	80	90	119	112	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.Aspen-Birch Unit
White Pine
Site Index 0-50

Table 68.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}

White pine forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	623	843	120	0	0	750	0	769	644	352	614	913	0
Red pine	86	0	163	0	0	0	0	256	118	122	31	0	0
Jack pine	69	0	0	0	0	0	0	283	178	29	0	0	0
White spruce	118	0	0	0	0	0	0	244	114	0	156	0	0
Black spruce	27	0	62	0	0	0	0	0	0	36	49	0	0
Balsam fir	38	0	0	0	0	0	0	17	0	0	80	38	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	7	0	0	0	0	0	0	0	0	0	17	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	969	843	345	0	0	750	0	1,569	1,054	538	947	951	0
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	15	0	0	0	0	0	0	18	51	0	11	0	0
Ash	3	0	0	0	0	0	0	18	0	0	0	0	0
Balsam poplar	0	0	0	0	0	0	0	0	0	0	0	0	0
Paper birch	37	0	0	0	0	0	0	53	0	102	45	0	0
Bigtooth aspen	2	0	0	0	0	0	0	0	0	18	0	0	0
Quaking aspen	154	0	0	0	0	0	0	258	545	57	78	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	209	0	0	0	0	0	0	347	596	178	135	0	0
Total all species	1,179	843	345	0	0	750	0	1,916	1,650	715	1,082	951	0
Number of plots	21	1	1	0	0	1	0	3	3	2	9	1	0
Standard error ^{3/}	148	R	R	0	0	R	0	203	490	28	225	R	0
Average basal area	102	120	34	0	0	120	0	119	108	90	98	112	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 69.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}

Black spruce forest type - Site index class 0-50

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	2	0	3	1	0	3	6	1	1	10	0	0	0
Red pine	2	0	0	0	0	6	0	0	0	24	0	0	0
Jack pine	14	18	3	1	10	0	52	32	23	10	20	0	0
White spruce	6	41	1	1	5	10	8	5	12	0	15	0	0
Black spruce	371	29	143	166	189	416	434	663	581	625	674	433	1,016
Balsam fir	22	0	10	4	18	33	45	40	56	18	1	0	0
Tamarack	34	14	9	15	21	16	43	57	68	49	60	92	61
Northern white-cedar	11	3	0	1	11	16	1	10	24	52	0	16	26
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	462	105	170	189	254	499	590	808	766	788	771	541	1,103
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	1	0	0	0	0
Ash	2	0	0	0	0	10	0	3	5	0	0	0	0
Balsam poplar	2	0	1	0	1	1	5	0	4	3	0	0	0
Paper birch	7	0	6	2	1	7	9	12	22	11	9	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	1	0	0	0
Quaking aspen	28	0	28	5	17	13	92	46	40	29	16	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	38	0	36	7	20	31	106	61	72	44	25	0	0
Total all species	500	105	206	196	273	530	696	869	838	833	796	541	1,103
Number of plots	422	9	42	77	70	43	45	31	40	24	25	9	7
Standard error	24	42	36	22	34	75	91	89	80	117	107	87	225
Average basal area	73	38	45	56	66	77	85	94	91	95	96	75	106

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.Aspen-Birch Unit
Black Spruce
Site Index 0-50

Table 70.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}

Black spruce forest type - Site index class 51-60

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	26	0	0	0	0	0	0	69	220	0	0	0	0
Red pine	8	0	0	0	0	0	0	0	92	0	0	0	0
Jack pine	35	62	64	0	0	44	122	0	0	0	0	0	0
White spruce	2	0	0	0	0	0	0	0	22	0	0	0	0
Black spruce	636	281	109	326	367	654	826	996	1,472	1,585	908	0	0
Balsam fir	40	46	19	11	32	30	77	14	95	0	136	0	0
Tamarack	28	0	0	18	52	28	0	18	140	0	0	0	0
Northern white-cedar	8	0	0	0	0	0	26	39	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	783	390	191	355	452	755	1,050	1,136	2,042	1,585	1,044	0	0
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	1	0	0	0	5	0	0	0	0	0	0	0	0
Ash	2	0	0	0	0	0	14	0	0	0	0	0	0
Balsam poplar	2	0	0	0	0	0	13	0	0	0	0	0	0
Paper birch	12	0	0	0	8	0	18	72	0	0	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	45	0	0	74	61	59	124	14	0	0	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	62	0	0	74	74	59	169	85	0	0	0	0	0
Total all species	845	390	191	429	526	814	1,219	1,222	2,042	1,585	1,044	0	0
Number of plots	36	2	5	4	6	5	5	4	3	1	1	0	0
Standard error ^{3/}	110	98	152	161	160	90	157	344	511	R	R	0	0
Average basal area	82	69	42	70	67	92	112	86	115	105	112	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 71.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}

Black spruce forest type					All site index classes								
(In cubic feet per acre)													
Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	4	0	2	1	0	3	5	9	17	10	0	0	0
Red pine	2	0	0	0	0	5	0	0	6	23	0	0	0
Jack pine	16	26	9	1	9	4	59	27	22	9	20	0	0
White spruce	6	34	1	1	5	8	9	4	13	0	14	0	0
Black spruce	392	75	143	174	203	445	466	703	643	663	683	433	1,016
Balsam fir	25	8	14	4	19	42	48	36	59	17	6	0	0
Tamarack	34	11	8	15	23	22	42	54	73	48	58	92	61
Northern white-cedar	10	2	0	1	10	13	3	13	22	50	0	16	26
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	489	156	178	197	269	542	632	845	855	820	781	541	1,103
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	1	0	0	0	0
Ash	2	0	0	0	0	8	1	3	4	0	0	0	0
Balsam poplar	2	0	1	0	1	1	6	0	4	3	0	0	0
Paper birch	9	0	8	2	2	10	17	18	20	11	9	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	1	0	0	0
Quaking aspen	30	0	24	9	20	25	96	41	37	28	16	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	42	0	33	11	24	45	120	62	67	43	24	0	0
Total all species	531	156	211	208	293	587	753	907	922	863	805	541	1,103
Number of plots	466	11	49	81	76	51	52	36	43	25	26	9	7
Standard error	24	50	34	23	35	68	83	86	93	116	103	87	225
Average basal area	74	44	45	56	66	78	87	93	93	95	96	75	106

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 72.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}

Balsam fir forest type - Site index class 0-50

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	16	0	30	8	11	10	16	8	65	0	36	0	0
Red pine	10	0	18	0	20	0	6	20	42	0	0	0	0
Jack pine	9	6	26	0	5	2	11	17	0	0	29	0	0
White spruce	25	4	24	0	14	31	20	52	29	0	103	0	0
Black spruce	66	94	30	43	29	97	66	65	111	44	84	0	0
Balsam fir	238	32	134	58	173	311	337	363	215	215	380	0	0
Tamarack	6	6	4	15	0	14	3	2	0	0	0	0	0
Northern white-cedar	51	34	16	52	83	36	63	38	94	33	55	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	421	175	282	176	336	501	522	565	558	293	688	0	0
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	3	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	1	0	0	0	0	3	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	3	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	10	0	2	6	19	8	12	9	0	0	61	0	0
Balsam poplar	8	0	3	6	16	16	7	6	5	0	0	0	0
Paper birch	70	33	22	33	68	78	100	108	47	61	89	0	0
Bigtooth aspen	1	0	0	0	4	0	2	0	0	0	0	0	0
Quaking aspen	63	5	32	27	34	63	128	88	40	0	42	0	0
Basswood	0	0	0	0	0	0	0	2	0	0	0	0	0
Elm	1	0	0	0	2	0	4	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	154	39	59	73	146	169	252	214	96	61	191	0	0
Total all species	575	214	341	249	482	670	774	779	654	354	878	0	0
Number of plots	174	9	17	22	20	32	36	20	11	2	5	0	0
Standard error	28	65	53	34	63	63	54	79	83	131	273	0	0
Average basal area	77	23	53	59	75	88	96	100	76	45	77	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 73.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}

Balsam fir forest type - Site index class 51-60

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	23	0	24	0	0	7	39	74	0	0	0	636	0
Red pine	23	0	22	10	17	35	28	0	0	0	0	0	0
Jack pine	12	0	9	0	7	11	14	18	335	0	0	0	0
White spruce	54	94	12	0	56	37	62	112	0	356	0	284	0
Black spruce	51	0	12	86	74	53	52	28	69	0	0	103	0
Balsam fir	367	89	113	198	305	438	406	562	95	441	463	461	0
Tamarack	6	31	0	8	2	2	8	33	0	0	0	0	0
Northern white-cedar	53	11	26	7	44	50	72	58	0	0	753	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	589	226	218	308	505	632	680	883	499	797	1,215	1,484	0
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	1	0	10	0	0	0	0	0	0	0	0	0	0
Soft maple	3	0	0	0	0	2	8	0	0	0	0	97	0
Ash	1	15	0	0	0	2	0	0	0	0	0	0	0
Balsam poplar	22	0	4	25	20	23	32	0	0	142	0	0	0
Paper birch	106	31	67	73	95	113	136	87	108	148	238	0	0
Bigtooth aspen	3	0	0	0	0	2	8	0	0	0	0	0	0
Quaking aspen	110	0	28	130	160	116	84	213	60	0	0	230	0
Basswood	0	0	0	4	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	1	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	247	47	109	232	275	259	268	300	168	290	238	327	0
Total all species	835	272	327	540	780	891	949	1,184	666	1,087	1,454	1,811	0
Number of plots	144	4	12	8	22	50	33	10	1	2	1	1	0
Standard error ^{3/}	42	128	49	116	104	62	99	155	R	80	R	R	0
Average basal area	85	55	50	77	83	92	88	100	64	106	94	120	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.Aspen-Birch Unit
Balsam Fir
Site Index 51-60

Table 74.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}

Balsam fir forest type - Site index class 61-70

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	19	0	0	0	6	21	0	0	122	148	0	0	0
Red pine	41	0	0	0	8	9	150	0	267	0	0	0	0
Jack pine	4	0	0	0	5	7	0	0	0	0	0	0	0
White spruce	69	0	88	21	31	15	99	329	211	247	0	0	0
Black spruce	49	73	0	49	31	46	29	252	0	0	0	0	0
Balsam fir	525	330	183	343	371	630	847	459	169	143	0	0	0
Tamarack	6	0	0	0	0	15	0	0	0	0	0	0	0
Northern white-cedar	46	0	156	147	22	54	0	69	0	41	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	757	403	427	560	473	796	1,125	1,109	769	579	0	0	0
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	2	0	0	0	0	7	0	0	0	0	0	0	0
Hard maple	5	0	0	0	0	8	0	44	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	12	0	0	47	0	15	7	0	33	0	0	0	0
Balsam poplar	30	0	0	17	6	28	31	208	0	0	0	0	0
Paper birch	106	0	0	16	148	107	192	80	36	101	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	164	405	0	49	93	182	142	375	37	211	0	0	0
Basswood	1	0	0	0	0	4	0	0	0	0	0	0	0
Elm	2	0	0	0	0	7	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	323	405	0	130	247	357	371	706	106	312	0	0	0
Total all species	1,080	808	427	690	720	1,153	1,496	1,815	874	891	0	0	0
Number of plots	52	3	2	4	8	19	9	3	2	2	0	0	0
Standard error	77	168	166	255	96	87	192	630	433	339	0	0	0
Average basal area	96	95	105	69	73	94	138	124	59	64	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 75.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}

Balsam fir forest type						All site index classes							
(In cubic feet per acre)													
Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	19	0	26	5	5	10	26	27	69	49	30	636	0
Red pine	19	0	18	2	16	18	31	12	71	0	0	0	0
Jack pine	9	3	18	0	6	7	11	15	24	0	24	0	0
White spruce	45	37	23	4	35	33	58	95	53	201	86	284	0
Black spruce	57	64	21	52	48	63	59	71	92	15	70	103	0
Balsam fir	334	95	129	124	263	460	424	432	200	266	394	461	0
Tamarack	6	10	2	11	1	8	5	11	0	0	0	0	0
Northern white-cedar	51	19	29	51	61	45	61	47	74	25	171	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	542	228	267	249	436	645	673	711	584	556	776	1,484	0
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	1	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	1	0	0	0	0	2	0	0	0	0	0	0	0
Hard maple	1	0	4	0	0	1	0	4	2	0	0	0	0
Soft maple	1	0	0	0	0	1	3	0	0	0	0	97	0
Ash	7	3	1	9	7	6	6	5	5	0	50	0	0
Balsam poplar	16	0	3	12	16	22	20	22	4	47	0	0	0
Paper birch	89	39	38	39	95	101	124	99	50	104	114	0	0
Bigtooth aspen	1	0	0	0	2	1	4	0	0	0	0	0	0
Quaking aspen	98	78	28	53	100	118	114	152	41	70	35	230	0
Basswood	1	0	0	1	0	2	0	1	0	0	0	0	0
Elm	1	0	0	0	1	2	2	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	216	120	74	114	221	257	273	285	102	221	199	327	0
Total all species	758	349	341	363	658	901	946	996	686	777	974	1,811	0
Number of plots	380	18	31	35	51	104	81	33	14	6	6	1	0
Standard error ^{3/}	26	70	35	51	56	46	57	98	82	169	243	R	0
Average basal area	83	42	55	64	79	92	98	102	73	71	80	120	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.

^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 76.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}

Northern white-cedar forest type - Site index class 0-50

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	10	0	0	0	0	0	12	0	3	20	0	10	31
Red pine	6	0	0	0	32	0	0	32	0	0	0	0	6
Jack pine	2	0	0	0	0	0	0	20	0	0	0	0	0
White spruce	7	0	0	0	0	7	8	0	3	1	0	27	15
Black spruce	85	0	0	8	97	138	125	62	101	110	108	70	72
Balsam fir	69	0	9	18	41	23	65	53	59	84	127	102	69
Tamarack	14	0	4	0	14	17	15	20	23	5	24	10	13
Northern white-cedar	503	139	132	134	179	220	400	367	403	692	451	733	832
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	696	139	145	161	363	406	625	554	592	912	709	952	1,038
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	2	0	0	0	0	0	0	0	1	0	0	0	13
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	2	0	0	0
Ash	22	0	7	0	0	0	7	19	18	5	14	5	90
Balsam poplar	9	0	12	0	0	0	2	3	1	21	34	10	8
Paper birch	50	0	16	11	20	6	15	50	35	61	52	100	75
Bigtooth aspen	1	0	0	0	0	0	0	0	9	0	0	0	0
Quaking aspen	13	0	0	2	0	0	36	39	11	2	11	11	8
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	2	0	0	0	1
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	98	0	34	12	20	6	60	112	77	91	111	126	194
Total all species	794	139	179	173	383	411	685	666	669	1,003	820	1,078	1,232
Number of plots	197	1	6	11	11	7	16	21	26	25	19	22	32
Standard error ^{3/}	44	R	93	41	105	143	97	97	93	103	112	194	115
Average basal area	116	38	47	67	90	98	108	113	113	129	122	136	143

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 77.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}

Northern white-cedar forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	10	0	0	0	0	0	12	0	3	20	0	10	31
Red pine	6	0	0	0	27	0	0	31	0	0	0	0	6
Jack pine	2	0	0	0	0	5	0	18	0	0	0	0	0
White spruce	7	0	0	0	0	5	8	0	3	1	0	27	15
Black spruce	87	0	0	8	82	136	125	94	97	110	108	70	72
Balsam fir	71	0	9	18	53	82	65	55	57	84	127	102	69
Tamarack	14	0	4	0	12	23	15	17	22	5	24	10	13
Northern white-cedar	499	139	132	134	184	230	400	391	417	692	451	733	832
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	696	139	145	161	358	482	625	606	600	912	709	952	1,038
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	3	0	0	0	0	0	0	0	6	0	0	0	13
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	2	0	0	0
Ash	22	0	7	0	6	0	7	17	18	5	14	5	90
Balsam poplar	9	0	12	0	0	7	2	5	1	21	34	10	8
Paper birch	51	0	16	11	34	25	15	53	33	61	52	100	75
Bigtooth aspen	2	0	0	0	0	16	0	0	9	0	0	0	0
Quaking aspen	17	0	0	2	16	26	36	55	11	2	11	11	8
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	2	0	0	0	1
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	104	0	34	12	55	74	60	130	79	91	111	126	194
Total all species	800	139	179	173	413	556	685	736	678	1,003	820	1,078	1,232
Number of plots	206	1	6	11	13	10	16	24	27	25	19	22	32
Standard error ^{3/}	43	R	93	41	93	160	97	100	89	103	112	194	115
Average basal area	116	38	47	67	87	97	108	116	113	129	122	136	143

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all age in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 78.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}

Tamarack forest type - Site index class 0-50

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	0	0	1	0	0	0	0	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	1	0	0	4	0	0	0	6	0	0	0	0	0
White spruce	1	6	0	0	0	0	0	0	0	0	0	0	0
Black spruce	50	13	25	91	21	43	25	54	81	40	179	106	27
Balsam fir	8	11	10	0	5	0	16	25	9	0	0	4	0
Tamarack	232	77	84	107	44	318	152	401	297	537	298	612	528
Northern white-cedar	11	0	8	13	0	0	3	0	26	0	0	57	25
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	303	106	128	215	71	361	196	486	413	577	477	780	581
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	1	0	0	0	0	0	0	0	0	0	0	7	0
Balsam poplar	1	0	0	0	0	0	0	11	0	0	0	0	0
Paper birch	8	19	6	0	0	6	15	12	0	6	0	24	13
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	5	4	0	6	0	0	6	37	0	0	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Select hardwood-	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	15	23	6	6	0	6	21	59	0	6	0	31	13
Total all species	317	129	134	220	71	368	217	545	413	583	477	811	594
Number of plots	98	8	21	16	7	6	8	8	5	5	1	8	5
Standard error ^{3/}	31	41	25	45	36	110	48	119	82	158	R	138	100
Average basal area	51	28	26	62	49	55	60	50	67	67	49	78	67

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 79.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}

Tamarack forest type - Site index class 51-60

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	20	0	28	0	0	51	0	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	4	0	17	0	0	0	0	0	0	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	92	0	129	0	74	0	222	144	0	0	0	0	0
Balsam fir	21	0	0	0	0	22	84	0	0	0	0	0	0
Tamarack	348	79	195	0	121	306	561	969	587	0	0	0	0
Northern white-cedar	22	0	18	0	138	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	507	79	387	0	333	380	867	1,113	587	0	0	0	0
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	3	0	0	0	0	10	0	0	0	0	0	0	0
Ash	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam poplar	3	0	0	0	0	0	15	0	0	0	0	0	0
Paper birch	4	0	0	0	0	14	0	0	0	0	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	9	0	0	0	0	25	15	0	0	0	0	0	0
Total all species	516	79	387	0	333	404	882	1,113	587	0	0	0	0
Number of plots	16	1	4	0	2	4	3	1	1	0	0	0	0
Standard error ^{3/}	94	R	186	0	186	91	257	R	R	0	0	0	0
Average basal area	39	11	26	0	28	34	74	60	34	0	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.Aspen-Birch Unit
Tamarack
Site Index 51-60

Table 80.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}

Tamarack forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	3	0	5	0	0	20	0	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	2	0	3	4	0	0	0	5	0	0	0	0	0
White spruce	0	5	0	0	0	0	0	0	0	0	0	0	0
Black spruce	55	11	42	91	31	26	78	64	68	40	179	106	27
Balsam fir	9	10	9	0	3	9	35	22	8	0	0	4	0
Tamarack	249	77	102	107	105	313	264	464	345	537	298	612	528
Northern white-cedar	13	0	9	13	25	0	2	0	21	0	0	57	25
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	331	103	170	215	165	369	379	556	442	577	477	780	581
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	4	0	0	0	0	0	0	0
Ash	1	0	0	0	0	0	0	0	0	0	0	7	0
Balsam poplar	1	0	0	0	0	0	4	9	0	0	0	0	0
Paper birch	8	17	5	0	0	10	11	11	0	6	0	24	13
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	4	3	0	6	0	0	4	33	0	0	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	14	20	5	6	0	14	19	53	0	6	0	31	13
Total all species	345	124	174	220	165	382	398	608	442	583	477	811	594
Number of plots	116	9	25	16	11	10	11	9	6	5	1	8	5
Standard error ^{3/}	29	37	39	45	53	72	116	122	73	158	R	138	100
Average basal area	49	26	26	62	41	47	64	51	61	67	49	78	67

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 81.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}

White spruce forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	19	0	0	0	100	0	33	0	0	0	0	0	0
Red pine	18	0	0	0	124	0	0	0	0	0	0	0	0
Jack pine	7	0	0	0	0	27	0	0	0	0	0	0	0
White spruce	329	0	28	374	188	453	339	986	56	884	948	593	0
Black spruce	22	0	0	0	0	53	63	0	0	0	0	0	0
Balsam fir	83	0	13	0	102	124	91	132	217	194	0	111	0
Tamarack	7	0	0	0	0	30	0	0	0	0	0	0	0
Northern white-cedar	35	0	0	0	44	0	0	0	799	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	520	0	41	374	558	686	526	1,117	1,071	1,078	948	705	0
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam poplar	2	0	0	0	0	9	0	0	0	0	0	0	0
Paper birch	108	23	14	64	204	119	108	0	180	0	390	181	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	109	0	0	75	114	232	84	0	0	576	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	220	23	14	139	318	360	192	0	180	576	390	181	0
Total all species	740	23	55	513	876	1,046	718	1,117	1,251	1,654	1,338	886	0
Number of plots	28	4	3	1	4	7	4	1	1	1	1	1	0
Standard error ^{3/}	115	23	55	R	328	260	62	R	R	R	R	R	0
Average basal area	63	5	19	71	86	84	69	94	98	79	70	64	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 82.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}

Elm-ash-cottonwood forest type - Site index class 0-50

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	6	0	0	0	23	0	0	0	0	0	55	0	0
Red pine	2	0	0	0	0	18	0	0	0	0	0	0	0
Jack pine	3	0	0	0	0	0	0	0	0	23	0	0	0
White spruce	9	9	12	0	0	4	5	6	0	33	0	0	46
Black spruce	7	0	0	0	25	24	9	0	14	7	0	11	0
Balsam fir	63	14	60	0	35	64	83	93	185	50	69	75	61
Tamarack	3	8	21	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	50	13	60	9	38	14	74	12	12	94	95	103	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	143	44	154	9	121	123	170	111	210	206	219	189	107
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	1	0	0	0	0	0	7	0	0	0	0	0	0
Soft maple	6	0	0	0	11	10	4	9	0	20	0	0	0
Ash	292	68	141	105	86	282	282	498	327	513	414	412	171
Balsam poplar	19	10	14	6	0	20	6	7	122	24	38	8	0
Paper birch	45	16	34	0	46	125	28	103	39	22	25	30	76
Bigtooth aspen	1	0	0	18	0	0	0	0	0	0	0	0	0
Quaking aspen	28	8	0	7	17	16	34	117	115	11	19	18	21
Basswood	1	0	0	0	0	0	0	0	0	6	0	0	0
Elm	36	6	23	0	50	31	10	87	31	60	0	66	177
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	2	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	429	107	212	136	210	484	371	821	633	658	496	534	445
Total all species	571	151	366	145	331	608	541	932	844	863	715	724	552
Number of plots	90	10	9	5	5	10	11	8	4	11	8	7	2
Standard error	41	35	69	41	170	64	39	140	171	161	129	120	41
Average basal area	75	32	58	35	50	80	82	100	90	98	95	90	69

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 83.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}

Elm-ash-cottonwood forest type - Site index class 51-60

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	2	0	0	0	0	0	0	0	22	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	21	0	17	0	16	28	24	12	20	8	13	0	82
Black spruce	8	0	0	0	0	19	0	10	11	10	0	0	30
Balsam fir	88	0	48	155	27	76	107	142	59	65	81	200	83
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	39	0	0	186	0	22	5	13	9	110	102	0	185
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	158	0	65	341	43	144	136	177	122	193	196	200	381
Hardwoods:													
Select white oaks	6	0	0	0	9	0	0	14	11	26	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	11	0	0	0	0	0	0	6	8	0	99	0	13
Hard maple	3	0	0	0	0	0	0	16	7	0	0	0	0
Soft maple	5	0	0	0	44	0	4	4	7	0	7	0	0
Ash	510	276	34	0	113	357	478	759	396	1,076	622	257	632
Balsam poplar	44	54	0	0	24	82	5	35	102	25	58	29	68
Paper birch	42	0	43	0	10	33	40	52	69	0	93	32	65
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	41	32	14	53	47	50	27	18	26	30	87	34	125
Basswood	9	0	0	0	0	0	0	15	7	29	0	96	0
Elm	80	0	0	0	0	34	125	12	97	199	117	161	119
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	4	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	751	362	91	53	247	556	679	930	734	1,385	1,081	609	1,020
Total all species	909	362	156	393	289	700	815	1,108	856	1,578	1,277	809	1,401
Number of plots	72	2	4	1	4	10	13	11	8	7	6	2	4
Standard error ^{3/}	69	286	61	R	86	67	114	132	113	328	223	106	421
Average basal area	85	40	29	49	54	69	78	102	88	116	118	71	112

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 84.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}

Elm-ash-cottonwood forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	4	0	0	0	13	0	0	0	14	0	32	0	0
Red pine	1	0	0	0	0	8	0	0	0	0	0	0	0
Jack pine	1	0	0	0	0	0	0	0	0	13	0	0	0
White spruce	15	6	13	0	7	27	16	9	12	22	6	0	60
Black spruce	7	0	0	0	14	20	4	5	11	8	0	9	17
Balsam fir	70	10	53	35	32	66	85	118	97	53	74	103	65
Tamarack	2	6	14	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	42	9	38	33	21	17	33	12	9	95	98	80	113
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	142	31	117	67	86	140	138	144	144	190	209	192	255
Hardwoods:													
Select white oaks	3	0	0	0	4	0	0	8	7	15	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	4	0	0	0	0	0	0	3	5	0	42	0	7
Hard maple	2	0	0	0	0	0	3	9	4	0	0	0	0
Soft maple	7	0	0	0	26	5	4	6	4	32	3	0	0
Ash	390	96	118	108	98	321	412	638	376	712	503	378	533
Bal-am poplar	30	15	9	9	11	49	9	26	118	23	47	13	39
Paper birch	45	21	34	0	30	75	49	74	54	12	54	31	59
Bigtooth aspen	1	0	0	13	0	0	0	0	0	0	0	0	0
Quaking aspen	37	14	4	19	30	35	43	72	51	17	48	21	78
Basswood	5	0	0	0	0	0	9	8	4	14	0	21	0
Elm	64	4	15	0	28	31	78	49	104	116	50	87	263
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	2	1	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	589	150	180	148	226	515	606	893	731	943	747	551	977
Total all species	731	181	297	215	313	655	744	1,037	874	1,133	956	743	1,232
Number of plots	174	14	14	7	9	21	27	20	13	19	14	9	7
Standard error	39	45	53	53	97	44	72	91	86	167	139	94	294
Average basal area	79	31	47	44	52	73	81	101	91	103	105	86	100

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 85.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}

Maple-basswood forest type - Site index class 0-50

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	7	0	0	0	0	0	0	0	34	40	0	0	0
Red pine	2	0	0	0	0	0	0	0	15	0	0	0	0
Jack pine	4	0	0	0	0	23	0	0	0	0	0	0	0
White spruce	14	44	0	0	0	22	35	0	0	49	0	0	0
Black spruce	2	0	0	0	0	0	9	0	0	0	0	0	0
Balsam fir	60	0	0	0	90	18	39	0	0	419	435	43	78
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	53	0	0	0	0	12	49	0	12	32	910	112	75
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	141	44	0	0	90	75	133	0	60	540	1,346	156	154
Hardwoods:													
Select white oaks	2	0	0	0	0	0	0	0	0	0	0	24	0
Select red oaks	20	0	0	0	0	0	13	0	135	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	66	0	45	0	140	12	100	121	116	59	0	42	12
Soft maple	30	90	14	52	0	32	12	93	20	61	0	41	0
Ash	48	0	51	207	0	9	14	19	37	225	0	154	0
Balsam poplar	15	0	0	0	25	0	0	0	27	83	86	0	38
Paper birch	74	123	59	0	87	103	47	123	147	21	0	59	19
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	97	76	88	0	15	18	0	187	10	0	2,265	0	133
Basswood	126	0	0	0	0	190	182	266	111	44	0	115	195
Elm	24	0	20	0	0	7	0	0	18	103	0	126	56
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	502	289	276	259	268	370	368	809	622	596	2,350	560	453
Total all species	643	333	276	259	358	446	501	809	682	1,136	3,696	716	607
Number of plots	38	1	2	2	3	6	7	3	5	2	1	3	3
Standard error ^{3/}	97	R	33	52	42	132	85	173	137	42	R	226	262
Average basal area	83	41	62	51	74	56	81	108	108	113	190	91	71

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 86.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota. 1977^{1/}Maple-basswood forest type - Site index class 51-60
(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	3	21	0	0	0	5	0	16	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	12	0	0	0	0	0	0	145	0	0	0	33	0
White spruce	39	48	0	0	54	27	37	0	173	49	0	0	41
Black spruce	2	0	0	0	0	0	0	32	0	0	0	0	0
Balsam fir	60	0	75	71	73	70	83	33	81	18	41	38	29
Tamarack	1	0	0	0	0	0	0	15	0	0	0	0	0
Northern white-cedar	33	0	0	0	35	9	0	0	107	50	387	0	50
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	151	69	75	71	162	110	121	242	361	117	428	72	120
Hardwoods:													
Select white oaks	1	0	0	0	0	0	0	0	0	0	0	17	0
Select red oaks	18	36	33	0	34	18	7	0	0	75	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	36	0	0	0	0	56	0	0	219	0	92	0	0
Hard maple	185	0	69	0	78	166	213	0	357	333	347	61	551
Soft maple	30	0	0	106	62	37	0	161	0	46	0	0	0
Ash	60	0	0	0	37	84	42	292	43	24	0	14	63
Balsam poplar	34	0	0	0	0	8	0	0	0	246	0	160	0
Paper birch	121	57	67	47	162	203	129	69	26	55	91	187	0
Bigtooth aspen	5	0	0	0	0	14	11	0	0	0	0	0	0
Quaking aspen	54	0	43	0	75	83	31	42	0	96	0	121	0
Basswood	66	44	58	0	64	41	126	0	42	15	0	149	228
Elm	20	0	0	0	9	11	0	39	0	0	0	198	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	631	138	268	153	521	720	558	604	688	889	530	907	842
Total all species	781	207	344	225	683	830	679	846	1,049	1,006	959	979	962
Number of plots	59	2	4	1	4	15	11	4	5	5	2	4	2
Standard error ^{3/}	49	69	81	R	87	78	98	258	98	190	182	313	163
Average basal area	93	45	64	41	78	98	95	77	127	109	75	108	111

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 87.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}

Maple-basswood forest type - Site index class 61-70

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	53	0	0	0	0	23	0	894	72	0	249	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	7	0	48	0	0	0	12	0	0	0	0	0	0
White spruce	22	0	20	0	0	0	14	0	69	0	0	64	46
Black spruce	10	0	69	0	0	21	0	0	0	0	0	0	0
Balsam fir	84	0	11	0	0	119	76	0	471	0	38	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	20	0	0	0	0	0	0	0	27	0	0	40	202
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	195	0	149	0	0	163	102	894	639	0	287	103	248
Hardwoods:													
Select white oaks	3	0	0	0	0	0	0	0	0	77	0	9	0
Select red oaks	9	0	0	0	0	13	0	0	0	0	116	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	12	0	0	0	0	53	9	0	0	0	0	0	0
Hard maple	241	0	48	212	339	317	307	0	82	52	221	206	535
Soft maple	26	0	15	0	37	18	23	0	28	121	40	0	92
Ash	50	0	0	103	0	25	36	0	0	113	0	81	295
Balsam poplar	31	0	0	0	0	20	61	0	118	0	0	30	0
Paper birch	94	0	19	31	206	89	78	236	124	0	365	41	0
Bigtooth aspen	3	0	0	0	0	0	0	0	0	0	0	25	0
Quaking aspen	74	0	153	74	0	30	168	145	106	0	0	0	0
Basswood	123	0	0	0	58	21	284	0	53	407	344	140	0
Elm	122	0	0	0	0	0	88	0	403	392	0	193	512
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	786	0	234	420	639	586	1,054	381	915	1,161	1,087	726	1,435
Total all species	981	0	383	420	639	749	1,156	1,274	1,554	1,161	1,374	829	1,682
Number of plots	33	0	3	2	2	6	7	1	3	1	2	4	2
Standard error ^{3/}	87	0	104	4	116	88	189	R	375	R	317	105	116
Average basal area	105	0	55	70	100	98	110	75	128	142	143	101	150

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 88.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}Aspen-Birch Unit
Maple-basswood
Site Index All Classes

Maple-basswood forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	16	14	0	0	0	8	0	96	30	9	100	0	0
Red pine	1	0	0	0	0	0	0	0	6	0	0	0	0
Jack pine	8	0	16	0	0	5	3	58	0	0	0	12	0
White spruce	26	46	7	0	22	19	30	0	83	38	0	23	25
Black spruce	4	0	23	0	0	5	2	13	0	0	0	0	0
Balsam fir	65	0	37	14	56	67	69	13	140	126	119	26	42
Tamarack	0	0	0	0	0	0	0	6	0	0	0	0	0
Northern white-cedar	34	0	0	0	14	7	14	0	52	35	337	45	104
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	155	61	83	14	92	110	119	186	309	208	555	106	171
Hardwoods:													
Select white oaks	3	0	0	0	0	1	0	14	0	9	0	16	0
Select red oaks	16	24	15	0	14	12	7	0	52	42	46	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	19	0	0	0	0	42	3	0	84	0	37	0	0
Hard maple	162	0	56	85	164	161	208	60	201	204	227	108	316
Soft maple	29	30	8	42	32	31	10	112	14	52	16	11	26
Ash	54	0	11	124	15	55	33	132	31	83	0	77	102
Balsam poplar	27	0	0	0	8	9	17	9	37	155	17	69	16
Paper birch	99	79	49	22	140	150	92	115	95	35	182	99	8
Bigtooth aspen	3	0	0	0	0	7	5	0	0	0	0	9	0
Quaking aspen	81	25	89	30	41	71	61	193	29	53	453	44	57
Basswood	105	30	26	0	37	67	186	142	71	149	138	136	149
Elm	61	0	4	0	4	7	25	60	100	261	0	177	170
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	659	188	259	302	454	612	644	837	715	1,044	1,117	747	845
Total all species	814	249	342	316	546	722	763	1,024	1,024	1,252	1,672	853	1,016
Number of plots	135	3	9	5	10	28	25	10	13	9	5	11	7
Standard error	45	58	47	46	63	60	87	146	135	220	527	126	212
Average basal area	93	44	61	56	80	88	95	97	120	114	125	101	105

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 89.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}

Aspen forest type - Site index class 0-50

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	6	4	0	0	0	13	8	0	0	0	0	138	0
Red pine	5	0	0	0	39	0	0	0	0	38	0	58	0
Jack pine	3	6	0	3	0	4	0	28	0	0	0	0	0
White spruce	11	0	0	0	0	14	18	94	0	0	0	46	0
Black spruce	17	6	14	0	0	21	26	53	18	0	0	181	0
Balsam fir	49	4	16	40	29	58	49	107	97	444	0	0	0
Tamarack	1	6	3	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	16	4	4	0	0	0	22	203	25	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	108	30	37	43	68	109	123	484	141	482	0	424	0
Hardwoods:													
Select white oaks	2	0	0	0	0	13	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	26	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	2	0	7	3	0	3	0	0	0	0	0	0	0
Soft maple	3	0	2	0	0	3	7	0	0	0	0	24	0
Ash	12	3	4	0	0	27	15	0	84	0	0	0	0
Balsam poplar	9	19	0	10	0	5	18	20	0	0	0	0	0
Paper birch	56	9	67	17	24	51	108	77	65	73	0	47	0
Bigtooth aspen	2	0	0	3	0	0	7	0	0	0	0	0	0
Quaking aspen	219	100	119	65	158	394	354	272	137	237	0	83	0
Basswood	2	0	0	0	5	9	0	0	9	0	0	0	0
Elm	4	6	2	0	0	11	5	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	1	0	0	0	0	4	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	312	138	201	98	187	520	515	369	294	310	0	180	0
Total all species	420	167	237	141	256	629	638	853	435	792	0	603	0
Number of plots	88	9	17	11	8	16	17	4	3	2	0	1	0
Standard error ^{3/}	34	66	35	42	77	52	62	247	106	421	0	R	0
Average basal area	61	31	51	37	60	82	70	106	57	102	0	71	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.Aspen-Birch Unit
Aspen
Site Index 0-50

Table 90.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}Aspen-Birch Unit
Aspen
Site Index 51-60

Aspen forest type - Site index class 51-60

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	11	0	2	4	9	24	9	21	4	77	0	0	0
Red pine	14	17	0	0	4	0	19	6	72	215	0	0	0
Jack pine	16	4	2	2	18	4	15	92	0	13	0	0	0
White spruce	24	9	8	6	44	7	54	30	69	0	0	0	0
Black spruce	20	3	5	12	27	21	8	84	44	12	0	0	0
Balsam fir	60	13	14	12	62	95	97	94	123	57	0	0	0
Tamarack	0	0	3	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	7	3	19	2	3	3	8	7	4	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	153	49	54	39	169	154	211	333	316	373	0	0	0
Hardwoods:													
Select white oaks	2	3	0	0	0	4	0	6	0	0	0	0	0
Select red oaks	1	0	0	0	0	0	0	2	0	18	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	1	0	0	2	0	0	0	5	0	30	0	0	0
Soft maple	6	1	2	3	0	18	7	11	7	0	0	0	0
Ash	11	5	10	25	2	8	9	6	31	48	0	0	0
Balsam poplar	15	33	5	15	13	15	8	13	6	12	0	0	0
Paper birch	74	32	20	10	45	128	102	123	120	147	0	0	0
Bigtooth aspen	15	0	0	0	0	16	6	50	167	0	0	0	0
Quaking aspen	370	184	128	108	338	399	600	730	486	390	0	0	0
Basswood	2	0	3	6	0	3	0	2	0	0	0	0	0
Elm	6	3	3	0	0	6	6	3	39	44	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	501	261	172	169	398	596	739	950	854	691	0	0	0
Total all species	654	310	226	208	566	750	950	1,283	1,170	1,063	0	0	0
Number of plots	250	42	34	25	19	41	48	27	9	5	0	0	0
Standard error	37	79	25	26	78	46	84	127	174	312	0	0	0
Average basal area	64	28	41	45	64	73	83	99	98	92	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 91.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}

Aspen forest type - Site index class 61-70

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	12	7	14	3	5	6	22	9	0	188	0	0	0
Red pine	11	2	0	0	5	17	13	13	45	73	0	0	0
Jack pine	12	4	1	3	2	2	33	40	11	0	0	0	0
White spruce	25	6	14	14	18	10	24	72	97	64	329	0	0
Black spruce	18	25	0	7	7	5	19	42	97	59	0	0	0
Balsam fir	87	29	45	46	64	122	126	114	104	104	95	0	0
Tamarack	1	0	0	2	3	0	1	2	0	0	0	0	0
Northern white-cedar	12	3	4	5	3	10	14	64	0	61	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	178	76	78	79	107	173	253	356	354	550	424	0	0
Hardwoods:													
Select white oaks	2	1	1	2	4	4	1	0	0	0	0	0	0
Select red oaks	1	0	0	0	3	0	2	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	4	0	0	0	0
Hard maple	3	2	0	1	5	4	3	2	0	0	0	0	0
Soft maple	8	2	1	3	9	14	5	14	21	0	0	0	0
Ash	21	14	13	14	38	13	16	65	22	23	0	0	0
Balsam poplar	48	17	33	23	26	53	107	26	30	82	0	0	0
Paper birch	112	47	59	37	87	159	150	107	231	132	385	0	0
Bigtooth aspen	15	1	0	0	3	18	39	37	0	0	0	0	0
Quaking aspen	511	86	149	214	412	620	829	754	886	1,456	614	0	0
Basswood	5	6	3	0	11	3	1	0	29	0	0	0	0
Elm	5	1	4	8	1	3	14	2	8	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	1	0	0	0	4	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	731	176	262	301	601	892	1,167	1,006	1,230	1,692	999	0	0
Total all species	908	252	340	380	709	1,064	1,420	1,362	1,584	2,242	1,423	0	0
Number of plots	401	57	44	28	51	86	80	32	16	5	2	0	0
Standard error	38	32	31	48	55	76	93	144	165	386	879	0	0
Average basal area	77	39	55	55	74	88	98	97	103	141	94	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.Aspen-Birch Unit
Aspen
Site Index 61-70

Table 92.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota 1977^{1/}

Aspen forest type - Site index class 71-80

(In cubic feet per acre)

Aspen-Birch Unit
Aspen
Site Index 71-80

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	9	2	10	3	13	4	15	3	0	67	40	0	0
Red pine	6	3	0	4	4	14	3	13	0	0	0	0	0
Jack pine	13	6	3	12	30	16	4	4	0	0	0	0	0
White spruce	18	9	8	14	18	23	24	17	0	0	23	0	0
Black spruce	17	12	6	11	17	14	22	38	105	0	28	0	0
Balsam fir	111	36	37	77	97	167	137	108	227	68	258	0	0
Tamarack	3	9	0	0	6	1	0	0	0	0	0	0	0
Northern white-cedar	7	2	2	0	1	14	6	0	0	385	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	183	80	67	121	184	252	210	184	332	520	349	0	0
Hardwoods:													
Select white oaks	2	0	0	0	1	0	7	12	0	0	0	0	0
Select red oaks	1	0	2	2	0	1	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	3	0	0	0	2	6	5	0	0	94	0	0	0
Soft maple	7	0	0	8	7	13	9	7	0	0	0	0	0
Ash	22	13	2	0	31	25	31	35	0	0	46	0	0
Balsam poplar	65	35	41	35	34	65	130	72	350	254	54	0	0
Paper birch	98	40	40	78	103	127	115	89	285	285	59	0	0
Bigtooth aspen	6	2	8	10	0	15	1	0	0	0	0	0	0
Quaking aspen	659	126	221	403	653	721	951	1,752	507	1,338	769	0	0
Basswood	4	6	0	0	2	6	6	0	0	0	0	0	0
Elm	10	8	6	2	1	12	13	40	0	0	55	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	876	229	321	537	835	991	1,268	2,007	1,142	1,971	983	0	0
Total all species	1,059	309	388	658	1,019	1,242	1,478	2,191	1,474	2,491	1,331	0	0
Number of plots	307	38	23	30	64	76	51	16	3	2	4	0	0
Standard error	51	35	48	126	47	66	86	638	358	277	208	0	0
Average basal area	82	37	58	62	81	94	101	125	122	176	98	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 93.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}

Aspen forest type - Site index class 81-90

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	11	10	20	27	0	19	0	0	0	0	0	0	0
Red pine	3	0	0	0	0	9	0	19	0	0	0	0	0
Jack pine	4	0	0	0	4	7	0	22	39	0	0	0	0
White spruce	16	16	0	6	17	15	35	22	0	0	0	0	0
Black spruce	17	0	0	8	20	14	9	57	155	0	0	0	0
Balsam fir	128	66	105	142	92	166	106	197	312	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	2	0	0	0	7	2	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	181	92	125	183	139	232	150	317	505	0	0	0	0
Hardwoods:													
Select white oaks	1	0	0	8	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	1	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	5	0	0	8	4	2	11	0	0	0	0	0	0
Soft maple	10	0	78	16	1	6	6	0	0	0	0	0	0
Ash	36	0	33	15	35	5	123	14	85	0	0	0	0
Balsam poplar	80	94	13	36	78	65	128	175	166	0	0	0	0
Paper birch	96	54	227	110	73	100	108	18	81	0	0	0	0
Bigtooth aspen	7	0	0	0	2	4	6	0	233	0	0	0	0
Quaking aspen	944	146	198	684	820	1,309	1,350	1,287	660	0	0	0	0
Basswood	15	0	41	51	0	1	29	0	0	0	0	0	0
Elm	11	0	9	7	5	22	21	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,205	294	599	936	1,017	1,516	1,783	1,494	1,224	0	0	0	0
Total all species	1,386	386	724	1,119	1,157	1,748	1,933	1,811	1,730	0	0	0	0
Number of plots	112	7	6	18	29	27	18	5	2	0	0	0	0
Standard error	77	109	83	111	91	141	242	552	980	0	0	0	0
Average basal area	93	41	82	86	85	102	113	106	131	0	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.

^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 94.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}

Aspen forest type - Site index class 91-100

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	11	0	0	0	0	0	0	192	55	0	0	0	0
Red pine	5	0	0	0	0	12	0	0	0	0	0	0	0
Jack pine	21	0	114	0	38	0	108	0	0	0	0	0	0
White spruce	52	60	0	0	112	51	0	0	0	0	0	0	0
Black spruce	19	0	0	0	0	51	0	0	0	0	0	0	0
Balsam fir	108	0	0	0	83	233	0	84	0	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	21	0	0	0	0	21	0	350	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	236	60	114	0	233	368	108	626	55	0	0	0	0
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	1	0	0	0	4	0	0	0	0	0	0	0	0
Soft maple	11	27	0	0	11	11	0	0	0	0	0	0	0
Ash	49	0	0	0	16	19	262	184	156	0	0	0	0
Balsam poplar	185	14	0	375	302	227	0	0	243	0	0	0	0
Paper birch	134	73	182	0	158	144	0	89	330	0	0	0	0
Bigtooth aspen	23	0	0	0	0	38	79	70	0	0	0	0	0
Quaking aspen	1,054	492	638	2,706	1,046	1,137	495	1,228	1,643	0	0	0	0
Basswood	11	0	0	0	49	0	0	0	0	0	0	0	0
Elm	23	0	0	0	10	19	180	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,489	606	820	3,082	1,595	1,596	1,017	1,572	2,372	0	0	0	0
Total all species	1,725	666	934	3,082	1,828	1,963	1,124	2,198	2,427	0	0	0	0
Number of plots	27	4	1	1	6	10	2	1	2	0	0	0	0
Standard error ^{3/}	153	116	R	R	205	174	239	R	1,164	0	0	0	0
Average basal area	105	74	68	142	108	113	65	101	154	0	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.

^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 95.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}

Aspen forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	10	4	8	7	7	10	15	13	4	104	27	138	0
Red pine	9	6	0	1	5	12	10	10	39	108	0	58	0
Jack pine	12	4	2	5	15	7	17	48	7	5	0	0	0
White spruce	21	9	9	9	23	16	31	46	62	23	125	46	0
Black spruce	18	13	5	9	14	14	17	55	75	25	18	181	0
Balsam fir	89	26	34	61	79	136	113	111	125	131	204	0	0
Tamarack	1	3	1	0	3	0	0	1	0	0	0	0	0
Northern white-cedar	9	3	8	2	3	9	10	40	3	77	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	170	67	66	94	149	203	213	323	316	472	374	424	0
Hardwoods:													
Select white oaks	2	1	0	2	2	3	2	4	0	0	0	0	0
Select red oaks	1	0	0	0	1	1	1	1	0	7	0	26	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	2	0	0	0	0
Hard maple	3	1	1	2	3	4	3	2	0	24	0	0	0
Soft maple	7	2	5	6	6	12	7	10	11	0	0	24	0
Ash	21	10	10	12	29	16	29	36	39	25	31	0	0
Balsam poplar	48	29	21	28	44	55	84	39	69	70	36	0	0
Paper birch	95	40	55	51	86	131	123	102	190	151	168	47	0
Bigtooth aspen	11	1	2	3	1	15	18	31	56	0	0	0	0
Quaking aspen	551	136	159	323	568	693	810	948	716	885	717	83	0
Basswood	5	4	4	10	6	4	4	1	14	0	0	0	0
Elm	7	3	4	4	2	9	14	9	13	16	37	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	1	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	751	226	261	440	747	944	1,094	1,182	1,111	1,177	988	180	0
Total all species	921	293	327	534	897	1,147	1,308	1,505	1,426	1,649	1,362	603	0
Number of plots	1,185	157	125	113	177	256	216	85	35	14	6	1	0
Standard error ^{3/}	23	27	20	55	37	42	53	144	131	255	263	R	0
Average basal area	76	36	52	59	78	89	94	104	104	123	96	71	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 96.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}

Paper birch forest type - Site index class 0-50

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	11	0	0	0	8	4	10	62	0	0	0	0	0
Red pine	4	0	0	0	27	0	8	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	24	0	19	0	26	53	22	9	78	0	0	0	0
Black spruce	17	0	0	0	41	37	0	20	0	58	0	0	0
Balsam fir	74	12	70	0	95	95	36	126	134	29	195	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	9	37	6	0	10	5	7	15	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	139	49	95	0	208	195	82	232	212	86	195	0	0
Hardwoods:													
Select white oaks	1	0	0	0	0	0	0	8	0	0	0	0	0
Select red oaks	1	0	0	0	0	0	3	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	2	0	0	0	0	0	13	0	0	0	0	0	0
Soft maple	4	0	9	0	0	0	9	0	0	22	0	0	0
Ash	26	0	0	0	0	51	47	53	24	40	0	0	0
Balsam poplar	10	0	4	12	0	9	15	22	25	12	0	0	0
Paper birch	218	35	71	53	221	309	375	324	334	135	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	92	27	41	141	125	190	118	68	74	25	0	0	0
Basswood	7	0	0	0	0	30	15	0	0	0	0	0	0
Elm	3	0	7	0	0	0	7	0	0	17	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	363	62	131	206	346	590	601	476	457	250	0	0	0
Total all species	502	110	226	206	554	784	684	707	669	337	195	0	0
Number of plots	61	5	11	3	7	9	9	8	4	4	1	0	0
Standard error ^{3/}	47	37	36	42	158	107	105	134	177	123	R	0	0
Average basal area	69	25	52	77	77	94	83	73	88	45	60	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 97.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}

Paper birch forest type - Site index class 51-60

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	13	15	20	54	11	8	23	0	11	0	0	0	0
Red pine	5	0	0	0	0	0	10	0	9	18	0	0	0
Jack pine	5	0	0	0	9	0	8	0	23	0	0	0	0
White spruce	37	19	0	0	37	22	51	22	101	0	69	0	0
Black spruce	3	0	0	0	0	5	5	0	0	0	0	0	0
Balsam fir	126	25	23	54	113	109	184	85	109	178	214	0	0
Tamarack	1	0	0	0	0	2	0	0	0	0	0	0	0
Northern white-cedar	13	0	0	0	0	12	6	3	55	68	0	0	0
Other softwoods	1	0	0	0	0	0	3	0	0	0	0	0	0
Total	203	58	43	108	170	159	290	111	309	264	283	0	0
Hardwoods:													
Select white oaks	2	0	0	0	0	0	0	6	0	0	84	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	10	43	0	0	7	9	5	14	25	0	0	0	0
Soft maple	20	24	20	45	0	40	17	6	9	18	0	0	0
Ash	24	0	0	0	43	21	19	35	21	65	0	0	0
Balsam poplar	21	0	0	0	18	16	21	4	20	88	276	0	0
Paper birch	532	209	129	476	236	608	516	611	696	805	434	0	0
Bigtooth aspen	3	0	0	0	0	4	2	0	12	0	0	0	0
Quaking aspen	164	0	41	213	199	115	189	125	209	465	119	0	0
Basswood	8	0	0	0	0	17	8	8	0	0	0	0	0
Elm	3	0	0	0	0	0	5	3	0	0	60	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	786	277	190	735	502	831	782	812	992	1,441	974	0	0
Total all species	989	335	233	843	673	989	1,072	923	1,300	1,706	1,257	0	0
Number of plots	108	4	4	2	8	28	33	14	9	5	1	0	0
Standard error ^{3/}	53	93	87	104	77	83	95	100	247	335	R	0	0
Average basal area	90	71	55	58	70	93	92	91	103	123	112	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.Aspen-Birch Unit
Paper Birch
Site Index 51-60

Table 98.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}

Paper birch forest type - Site index class 61-70

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	11	0	0	0	0	7	15	45	0	0	0	0	0
Red pine	20	0	26	0	0	16	28	22	81	0	0	0	0
Jack pine	1	0	21	0	0	2	0	0	0	0	0	0	0
White spruce	18	0	23	0	6	18	17	14	61	29	0	0	0
Black spruce	9	0	0	0	0	0	12	47	0	0	0	0	0
Balsam fir	124	23	79	0	88	150	127	124	149	133	447	0	0
Tamarack	3	0	0	0	7	3	3	0	0	0	0	0	0
Northern white-cedar	23	0	17	0	22	3	15	0	70	322	85	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	209	23	165	0	122	200	217	253	361	484	532	0	0
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	7	0	0	0	0	13	10	7	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	4	0	0	0	0	6	8	0	0	27	0	0	0
Hard maple	15	0	0	0	16	15	6	8	51	76	0	0	0
Soft maple	22	12	0	0	4	12	56	16	42	0	0	0	0
Ash	27	0	0	0	14	36	18	0	90	67	0	253	0
Balsam poplar	34	21	0	0	29	41	44	23	9	60	177	0	0
Paper birch	669	197	230	346	671	723	808	626	606	618	287	835	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	158	725	99	0	88	140	163	228	103	48	200	318	0
Basswood	15	0	0	0	8	28	6	19	12	0	69	0	0
Elm	6	0	0	0	0	7	8	0	32	0	59	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	957	955	329	346	830	1,020	1,128	926	944	896	791	1,406	0
Total all species	1,166	978	494	346	952	1,220	1,345	1,179	1,305	1,380	1,323	1,406	0
Number of plots	107	3	4	2	16	31	25	14	7	3	1	1	0
Standard error ^{3/}	54	566	186	81	157	90	86	154	218	335	R	R	0
Average basal area	92	89	75	53	81	92	100	91	96	100	105	116	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 99.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}

Paper birch forest type - Site index class 71-80

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	3	0	0	0	0	6	0	0	0	0	0	0	0
Red pine	96	0	0	0	0	40	0	0	1,020	0	0	0	0
Jack pine	2	0	0	0	0	4	0	0	0	0	0	0	0
White spruce	33	0	82	0	0	33	0	0	88	0	89	0	0
Black spruce	4	0	59	0	0	0	0	0	0	0	0	0	0
Balsam fir	120	0	143	0	37	97	40	379	279	0	392	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	20	0	0	0	0	0	0	251	141	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	279	0	284	0	37	180	40	630	1,528	0	481	0	0
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	2	0	0	0	14	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	5	0	0	0	0	0	0	0	66	0	0	0	0
Hard maple	14	0	0	0	15	9	63	0	0	0	0	0	0
Soft maple	12	0	0	0	13	9	48	0	0	0	0	0	0
Ash	34	0	0	0	67	41	0	81	0	0	0	0	0
Balsam poplar	77	0	0	0	100	86	67	229	21	0	0	0	0
Paper birch	692	0	88	0	430	697	791	612	1,081	0	1,880	0	0
Bigtooth aspen	8	0	0	0	0	9	26	0	0	0	0	0	0
Quaking aspen	201	0	112	0	190	207	254	427	138	0	93	0	0
Basswood	8	0	0	0	16	0	0	0	72	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,053	0	199	0	845	1,059	1,248	1,348	1,378	0	1,973	0	0
Total all species	1,331	0	483	0	882	1,239	1,288	1,978	2,906	0	2,454	0	0
Number of plots	27	0	2	0	4	14	3	1	2	0	1	0	0
Standard error ^{3/}	147	0	289	0	252	113	282	R	1,111	0	R	0	0
Average basal area	94	0	45	0	70	93	101	142	150	0	124	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.Aspen-Birch Unit
Paper Birch
Site Index 71-80

Table 100.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}

Paper birch forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	12	5	11	15	4	7	18	31	4	0	0	0	0
Red pine	18	0	5	0	5	13	16	8	122	7	0	0	0
Jack pine	2	0	4	0	2	2	4	0	9	0	0	0	0
White spruce	27	6	21	0	16	25	33	16	83	7	39	0	0
Black spruce	8	0	5	0	8	6	6	22	0	19	0	0	0
Balsam fir	115	19	69	15	89	123	138	117	142	117	312	0	0
Tamarack	1	0	0	0	3	2	1	0	0	0	0	0	0
Northern white-cedar	16	15	6	0	12	6	9	11	58	109	21	0	0
Other softwoods	0	0	0	0	0	0	1	0	0	0	0	0	0
Total	199	46	120	31	141	183	227	204	418	260	373	0	0
Hardwoods:													
Select white oaks	1	0	0	0	0	0	0	4	0	0	21	0	0
Select red oaks	3	0	0	0	2	5	4	3	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	2	0	0	0	0	2	3	0	6	7	0	0	0
Hard maple	10	14	0	0	11	10	9	8	27	19	0	0	0
Soft maple	17	11	8	13	3	20	31	8	17	15	0	0	0
Ash	26	0	0	0	24	34	22	27	42	57	0	253	0
Balsam poplar	28	5	2	5	29	37	31	21	17	56	113	0	0
Paper birch	530	134	124	258	454	631	614	555	636	535	650	835	0
Bigtooth aspen	2	0	0	0	0	3	2	0	5	0	0	0	0
Quaking aspen	152	192	64	122	132	152	173	160	144	214	103	318	0
Basswood	10	0	0	0	5	20	8	10	10	0	17	0	0
Elm	4	0	3	0	0	3	6	1	10	6	30	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	785	357	202	397	660	915	903	797	915	908	935	1,406	0
Total all species	984	402	322	428	800	1,099	1,129	1,002	1,333	1,168	1,307	1,406	0
Number of plots	305	12	22	7	35	83	70	37	22	12	4	1	0
Standard error ^{3/}	34	163	53	114	87	51	62	84	186	238	462	R	0
Average basal area	87	56	56	64	76	93	94	89	102	91	100	116	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 101.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}

Balsam poplar forest type						Site index class 0-50							
(In cubic feet per acre)													
Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	16	0	0	0	0	31	39	0	0	0	0	0	0
Black spruce	5	0	0	0	0	0	0	0	44	0	0	0	0
Balsam fir	98	0	18	0	0	37	129	0	486	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	5	0	0	0	0	0	0	0	39	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	125	0	18	0	0	68	168	0	570	0	0	0	0
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	2	0	0	0	0	0	7	0	0	0	0	0	0
Ash	30	0	0	0	0	86	0	73	48	0	0	0	0
Balsam poplar	221	34	42	0	0	309	461	173	175	0	0	0	0
Paper birch	52	0	0	0	0	28	57	50	247	0	0	0	0
Bigtooth aspen	5	0	0	0	0	0	0	0	44	0	0	0	0
Quaking aspen	60	61	0	40	0	97	51	138	47	0	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	10	0	0	0	0	10	0	0	62	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	380	95	42	40	0	531	575	433	622	0	0	0	0
Total all species	504	95	60	40	0	598	743	433	1,192	0	0	0	0
Number of plots	17	2	2	2	0	4	4	1	2	0	0	0	0
Standard error ^{3/}	100	95	60	40	0	134	94	R	98	0	0	0	0
Average basal area	55	8	10	12	0	70	71	68	118	0	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.Aspen-Birch Unit
Balsam Poplar
Site Index 0-50

Table 102.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}

Balsam poplar forest type - Site index class 51-60

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	2	0	0	0	0	0	17	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	6	19	0	0	0	6	0	0	35	0	0	0	0
Black spruce	11	29	0	0	0	21	9	0	0	0	0	0	0
Balsam fir	92	0	0	0	36	169	72	191	24	56	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	17	0	37	0	8	38	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	127	49	37	0	44	234	98	191	60	56	0	0	0
Hardwoods:													
Select white oaks	2	0	0	0	0	5	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	5	0	0	0	0	0	0	0	0	159	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	38	0	0	0	8	63	28	17	0	369	0	0	0
Balsam poplar	386	144	88	0	342	536	496	189	471	493	0	0	0
Paper birch	68	14	0	0	62	100	44	65	37	315	0	0	0
Bigtooth aspen	2	0	0	0	0	8	0	0	0	0	0	0	0
Quaking aspen	71	49	15	0	65	49	46	212	180	62	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	14	0	13	0	14	33	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	586	207	116	0	491	793	614	483	688	1,397	0	0	0
Total all species	713	255	154	0	535	1,026	712	673	748	1,453	0	0	0
Number of plots	34	3	3	0	6	11	5	3	2	1	0	0	0
Standard error ^{3/}	92	97	91	0	88	205	77	414	120	R	0	0	0
Average basal area	71	27	18	0	71	96	74	63	55	124	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 103.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}

Balsam poplar forest type					Site index class 61-70								
(In cubic feet per acre)													
Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Red pine	1	0	0	16	0	0	0	0	0	0	0	0	0
Jack pine	1	12	0	0	0	0	0	0	0	0	0	0	0
White spruce	16	47	0	0	0	0	35	17	22	45	0	0	0
Black spruce	6	23	0	0	11	0	14	0	0	0	0	0	0
Balsam fir	110	72	11	33	219	122	93	220	235	107	0	0	0
Tamarack	4	0	0	0	0	0	20	0	0	0	0	0	0
Northern white-cedar	39	0	4	0	91	15	88	27	150	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	178	153	15	49	321	138	249	263	407	152	0	0	0
Hardwoods:													
Select white oaks	1	0	0	0	8	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	7	0	0	12	0	27	0	11	0	0	0	0	0
Soft maple	1	0	0	0	11	0	0	0	0	0	0	0	0
Ash	66	30	0	15	152	29	12	95	327	258	166	0	0
Balsam poplar	452	106	171	125	608	428	581	798	710	654	869	0	0
Paper birch	54	27	22	0	65	155	8	36	89	73	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	77	77	55	97	101	86	68	107	0	140	0	0	0
Basswood	6	11	0	0	0	0	0	0	23	97	0	0	0
Elm	21	12	0	10	37	0	11	12	54	208	64	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	685	264	248	260	983	724	680	1,058	1,203	1,431	1,098	0	0
Total all species	862	417	263	309	1,303	862	929	1,321	1,609	1,582	1,098	0	0
Number of plots	51	5	7	4	4	10	10	5	3	2	1	0	0
Standard error ^{3/}	83	65	100	52	129	203	141	152	479	48	R	0	0
Average basal area	73	32	41	51	110	69	69	112	112	111	120	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.

^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Aspen-Birch Unit
Balsam Poplar
Site Index 61-70

Table 104.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}Aspen-Birch Unit
Balsam Poplar
Site Index 71-80

Balsam poplar forest type - Site index class 71-80

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	26	0	114	0	15	60	0	0	0	0	0	0	0
Black spruce	4	19	0	0	4	0	0	0	0	0	0	0	0
Balsam fir	135	22	124	0	22	265	252	0	0	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	5	0	0	122	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	169	41	238	122	42	325	252	0	0	0	0	0	0
Hardwoods:													
Select white oaks	2	0	0	0	7	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	4	0	0	0	12	0	0	0	0	0	0	0	0
Ash	27	54	0	134	0	13	63	0	0	0	0	0	0
Balsam poplar	564	134	0	0	425	799	968	0	0	0	0	0	0
Paper birch	70	27	0	0	94	67	85	0	0	0	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	135	26	111	0	103	244	139	0	0	0	0	0	0
Basswood	3	26	0	0	0	0	0	0	0	0	0	0	0
Elm	53	0	0	0	32	101	75	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	858	267	111	134	672	1,224	1,331	0	0	0	0	0	0
Total all species	1,027	309	348	257	714	1,548	1,583	0	0	0	0	0	0
Number of plots	26	3	1	1	9	7	5	0	0	0	0	0	0
Standard error ^{3/}	128	84	R	R	114	204	217	0	0	0	0	0	0
Average basal area	78	33	30	34	64	107	110	0	0	0	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 105.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}

Balsam poplar forest type - Site index class 81-90

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	17	16	0	0	33	18	0	0	0	0	0	0	0
Black spruce	24	0	0	0	0	73	0	0	0	0	0	0	0
Balsam fir	189	0	0	0	111	377	0	80	215	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	231	16	0	0	144	469	0	80	215	0	0	0	0
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	20	0	0	0	0	0	0	0	151	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	8	0	0	0	0	0	0	0	63	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	47	0	0	0	131	22	0	71	0	0	0	0	0
Balsam poplar	818	118	0	0	897	1,181	214	1,185	569	0	0	0	0
Paper birch	106	0	0	0	105	142	47	76	170	0	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	318	0	0	0	256	518	244	484	213	0	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	27	0	0	0	0	44	0	0	96	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,345	118	0	0	1,389	1,906	505	1,816	1,263	0	0	0	0
Total all species	1,576	134	0	0	1,534	2,375	505	1,896	1,478	0	0	0	0
Number of plots	15	2	0	0	4	5	1	1	2	0	0	0	0
Standard error ^{3/}	220	134	0	0	246	192	R	R	97	0	0	0	0
Average basal area	103	23	0	0	110	133	41	120	115	0	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.Aspen-Birch Unit
Balsam Poplar
Site Index 81-90

Table 106.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Aspen-Birch Unit, Minnesota, 1977^{1/}

Balsam poplar forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	1	0	0	0	0	0	3	0	0	0	0	0	0
Red pine	0	0	0	8	0	0	0	0	0	0	0	0	0
Jack pine	0	4	0	0	0	0	0	0	0	0	0	0	0
White spruce	16	22	9	0	11	19	20	17	15	30	0	0	0
Black spruce	8	17	0	0	3	16	8	0	10	0	0	0	0
Balsam fir	115	28	18	17	70	188	123	176	240	90	0	0	0
Tamarack	1	0	0	0	0	0	8	0	0	0	0	0	0
Northern white-cedar	19	0	11	15	16	15	35	12	59	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	161	71	38	40	100	239	197	205	323	120	0	0	0
Hardwoods:													
Select white oaks	1	0	0	0	4	2	0	0	0	0	0	0	0
Select red oaks	2	0	0	0	0	0	0	0	34	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	1	0	0	0	0	0	0	0	0	53	0	0	0
Hard maple	3	0	0	6	0	7	0	5	14	0	0	0	0
Soft maple	1	0	0	0	6	0	1	0	0	0	0	0	0
Ash	50	21	0	35	54	41	23	110	120	295	166	0	0
Balsam poplar	478	111	119	154	531	619	607	657	507	601	869	0	0
Paper birch	64	17	12	13	76	106	40	45	130	154	0	0	0
Bigtooth aspen	1	0	0	0	0	2	0	0	10	0	0	0	0
Quaking aspen	126	49	42	120	155	164	82	279	98	114	0	0	0
Basswood	3	9	0	0	0	0	0	0	8	64	0	0	0
Elm	26	4	3	17	29	36	20	5	53	139	64	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	757	211	175	344	855	978	773	1,102	973	1,419	1,098	0	0
Total all species	918	282	213	384	955	1,216	970	1,307	1,296	1,539	1,098	0	0
Number of plots	147	15	13	8	25	37	25	11	9	3	1	0	0
Standard error ^{3/}	57	46	61	167	102	128	97	274	184	51	R	0	0
Average basal area	75	27	30	45	81	93	77	98	101	115	120	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.

^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 107.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Jack pine forest type - Site index class 0-50

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	3	0	0	0	0	10	2	0	0	0	0	0	0
Red pine	47	52	125	0	78	50	54	0	0	0	0	0	0
Jack pine	462	174	0	59	470	452	701	627	515	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	0	0	0	0	0	0	0	0	0	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	512	226	125	59	548	512	758	627	515	0	0	0	0
Hardwoods:													
Select white oaks	3	0	0	0	0	10	0	0	0	0	0	0	0
Select red oaks	20	0	0	0	0	76	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam poplar	1	0	0	0	0	4	0	0	0	0	0	0	0
Paper birch	21	0	0	0	0	66	14	0	0	0	0	0	0
Bigtooth aspen	1	0	0	0	0	4	0	0	0	0	0	0	0
Quaking aspen	6	0	12	0	9	15	0	0	0	0	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	52	0	12	0	9	176	14	0	0	0	0	0	0
Total all species	564	226	137	59	557	688	772	627	515	0	0	0	0
Number of plots	34	2	3	2	3	9	8	5	2	0	0	0	0
Standard error	77	74	106	59	261	127	172	275	50	0	0	0	0
Average basal area	65	30	54	53	77	69	80	58	54	0	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.Northern Pine Unit
Jack pine
Site Index 0-50

Table 108.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Jack pine forest type - Site index class 51-60

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	3	0	0	0	0	4	0	8	18	0	0	0	0
Red pine	52	92	12	0	39	45	60	120	136	0	0	0	0
Jack pine	812	444	153	373	711	830	1,094	978	1,435	0	806	0	0
White spruce	6	0	0	0	0	15	9	0	0	0	0	0	0
Black spruce	2	0	0	6	0	3	2	0	0	0	0	0	0
Balsam fir	2	0	0	0	0	0	6	0	0	0	0	0	0
Tamarack	1	0	0	0	0	4	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	878	536	165	379	750	900	1,172	1,106	1,588	0	806	0	0
Hardwoods:													
Select white oaks	3	0	0	0	3	0	11	4	0	0	0	0	0
Select red oaks	5	0	0	0	4	4	3	7	0	0	157	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam poplar	1	0	0	0	0	1	4	0	0	0	0	0	0
Paper birch	10	0	7	0	6	1	15	19	20	0	164	0	0
Bigtooth aspen	2	0	0	0	0	0	0	23	0	0	0	0	0
Quaking aspen	41	0	0	21	65	61	28	76	0	0	0	0	0
Basswood	1	0	0	0	0	0	0	6	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	63	0	7	21	77	68	60	134	20	0	321	0	0
Total all species	941	536	172	400	827	968	1,232	1,240	1,608	0	1,127	0	0
Number of plots	86	3	5	10	10	24	22	8	3	0	1	0	0
Standard error ^{3/}	57	145	60	72	60	92	97	201	372	0	R	0	0
Average basal area	79	53	30	62	91	79	90	89	99	0	71	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 109.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Jack pine forest type - Site index class 61-70

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	4	0	0	6	0	11	0	0	0	0	0	0	0
Red pine	85	0	45	84	108	67	107	82	0	0	0	0	0
Jack pine	1,046	409	70	596	908	1,245	1,135	1,955	0	0	0	0	0
White spruce	3	0	0	0	3	5	4	0	0	0	0	0	0
Black spruce	18	0	0	10	9	30	19	0	0	0	0	0	0
Balsam fir	8	0	65	8	9	3	10	0	0	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,164	409	180	703	1,038	1,361	1,275	2,037	0	0	0	0	0
Hardwoods:													
Select white oaks	3	0	0	0	0	6	4	0	0	0	0	0	0
Select red oaks	8	60	0	30	0	0	12	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	1	0	0	0	0	2	0	0	0	0	0	0	0
Balsam poplar	2	0	0	0	0	0	10	0	0	0	0	0	0
Paper birch	30	18	119	9	22	27	41	53	0	0	0	0	0
Bigtooth aspen	14	0	0	0	14	10	34	0	0	0	0	0	0
Quaking aspen	36	25	0	26	27	37	61	0	0	0	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	1	0	0	2	0	1	4	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	2	0	0	0	0	0	10	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	97	104	119	67	64	83	175	53	0	0	0	0	0
Total all species	1,261	513	298	770	1,102	1,444	1,450	2,089	0	0	0	0	0
Number of plots	73	2	2	8	17	25	16	3	0	0	0	0	0
Standard error	68	36	120	156	93	105	148	189	0	0	0	0	0
Average basal area	89	57	45	89	84	95	89	125	0	0	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.Northern Pine Unit
Jack Pine
Site Index 61-70

Table 110.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Jack pine forest type - Site index class 71-80

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	3	0	0	0	8	0	0	0	0	0	0	0	0
Red pine	144	0	0	101	75	433	42	114	0	0	0	0	0
Jack pine	928	561	114	832	738	1,180	943	1,970	0	0	0	0	0
White spruce	3	0	0	0	6	0	0	0	0	0	0	0	0
Black spruce	41	0	0	0	103	0	0	0	0	0	0	0	0
Balsam fir	18	0	0	17	4	0	0	140	0	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,138	561	114	950	935	1,613	985	2,224	0	0	0	0	0
Hardwoods:													
Select white oaks	3	0	0	0	9	0	0	0	0	0	0	0	0
Select red oaks	11	0	0	31	17	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam poplar	5	0	0	0	0	0	0	46	0	0	0	0	0
Paper birch	34	0	0	41	56	9	0	39	0	0	0	0	0
Bigtooth aspen	22	0	0	0	54	0	0	0	0	0	0	0	0
Quaking aspen	103	0	0	0	73	254	164	116	0	0	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	177	0	0	72	209	263	164	201	0	0	0	0	0
Total all species	1,314	561	114	1,022	1,143	1,877	1,150	2,424	0	0	0	0	0
Number of plots	30	1	2	4	12	6	2	3	0	0	0	0	0
Standard error ^{3/}	149	R	114	239	190	109	148	789	0	0	0	0	0
Average basal area	93	75	68	86	85	111	77	132	0	0	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 111.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Jack pine forest type		All site index classes											
(In cubic feet per acre)													
Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	4	0	0	2	4	7	0	3	11	0	0	0	0
Red pine	75	48	44	43	80	91	74	83	81	0	0	0	0
Jack pine	849	382	94	505	791	972	1,036	1,152	1,067	0	806	0	0
White spruce	4	0	0	0	3	8	5	0	0	0	0	0	0
Black spruce	12	0	0	6	31	13	7	0	0	0	0	0	0
Balsam fir	6	0	11	5	4	1	6	23	0	0	0	0	0
Tamarack	0	0	0	0	0	1	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	949	430	149	561	914	1,093	1,129	1,260	1,159	0	806	0	0
Hardwoods:													
Select white oaks	3	0	0	0	3	4	6	1	0	0	0	0	0
Select red oaks	9	15	0	15	5	12	5	3	0	0	157	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	1	0	0	0	0	0	0	0	0
Ash	0	0	0	0	0	1	0	0	0	0	0	0	0
Balsam poplar	2	0	0	0	0	1	5	7	0	0	0	0	0
Paper birch	23	5	23	10	34	21	23	22	12	0	164	0	0
Bigtooth aspen	9	0	0	0	21	5	11	9	0	0	0	0	0
Quaking aspen	47	6	3	17	71	63	40	48	0	0	0	0	0
Basswood	0	0	0	0	0	0	0	2	0	0	0	0	0
Elm	0	0	0	1	0	0	1	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	1	0	0	0	0	0	3	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	93	26	26	41	135	107	95	92	12	0	321	0	0
Total all species	1,042	456	174	603	1,049	1,200	1,224	1,352	1,171	0	1,127	0	0
Number of plots	228	8	12	25	45	64	48	20	5	0	1	0	0
Standard error ^{3/}	42	71	42	86	76	72	78	208	337	0	R	0	0
Average basal area	82	51	45	75	86	87	88	92	81	0	71	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.

^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 112.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Red pine forest type - Site index class 51-60

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	92	0	0	0	0	81	0	27	117	532	89	0	0
Red pine	1,132	0	0	0	417	789	987	1,194	1,811	567	1,241	0	0
Jack pine	88	0	0	0	0	177	705	148	0	0	0	0	0
White spruce	6	0	0	0	0	0	0	0	16	0	0	0	0
Black spruce	4	0	0	0	0	0	0	0	11	0	0	0	0
Balsam fir	67	0	0	0	0	211	0	0	0	0	723	0	0
Tamarack	10	0	0	0	0	0	0	0	29	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,399	0	0	0	417	1,257	1,692	1,368	1,984	1,099	2,054	0	0
Hardwoods:													
Select white oaks	10	0	0	0	39	0	0	11	0	100	0	0	0
Select red oaks	10	0	0	0	47	0	0	0	11	60	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	2	0	0	0	41	0	0	0	0	0	0	0	0
Ash	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam poplar	2	0	0	0	0	0	0	0	6	0	0	0	0
Paper birch	79	0	0	0	92	0	0	0	195	0	72	0	0
Bigtooth aspen	28	0	0	0	0	0	0	0	80	0	0	0	0
Quaking aspen	99	0	0	0	154	124	0	105	152	0	46	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	231	0	0	0	373	124	0	117	445	160	119	0	0
Total all species	1,630	0	0	0	789	1,382	1,692	1,485	2,429	1,259	2,172	0	0
Number of plots	17	2	0	0	1	2	1	3	6	1	1	0	0
Standard error ^{3/}	267	0	0	0	R	66	R	561	485	R	R	0	0
Average basal area	107	12	0	0	71	122	116	89	134	94	202	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 113.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Red pine forest type - Site index class 61-70

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	117	0	0	0	41	0	245	33	750	0	211	0	0
Red pine	1,131	196	89	1,113	1,030	856	984	1,703	2,854	0	1,390	0	0
Jack pine	91	165	0	0	0	386	277	0	0	0	0	0	0
White spruce	22	0	0	245	0	0	35	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	28	0	0	0	0	233	0	14	0	0	122	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,389	361	89	1,358	1,072	1,475	1,540	1,751	3,603	0	1,723	0	0
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	7	0	0	0	0	0	49	0	0	0	0	0	0
Balsam poplar	28	0	0	0	0	280	54	0	0	0	0	0	0
Paper birch	28	0	0	0	95	0	62	0	0	0	83	0	0
Rigtooth aspen	14	0	0	0	30	0	0	0	0	0	131	0	0
Quaking aspen	104	0	0	0	86	53	493	14	205	0	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	2	0	0	0	0	0	16	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	6	0	0	0	0	0	0	0	85	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	190	0	0	0	212	333	674	14	291	0	214	0	0
Total all species	1,578	361	89	1,358	1,284	1,808	2,214	1,765	3,894	0	1,937	0	0
Number of plots	14	2	1	1	2	1	2	3	1	0	1	0	0
Standard error ^{3/}	289	361	R	R	246	R	1	708	R	0	R	0	0
Average basal area	92	29	52	90	85	109	131	94	154	0	109	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.Northern Pine Unit
Red Pine
Site Index 61-70

Table 114.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Red pine forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	113	0	0	0	21	73	122	33	292	532	145	231	0
Red pine	1,035	78	45	967	997	892	895	1,161	1,925	567	894	696	0
Jack pine	116	84	0	61	285	292	343	71	0	0	0	0	0
White spruce	12	0	0	82	0	24	17	0	9	0	0	0	0
Black spruce	5	0	0	58	0	0	0	0	7	0	0	0	0
Balsam fir	41	0	0	0	0	150	0	5	12	0	211	0	0
Tamarack	3	0	0	0	0	0	0	0	17	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,324	162	45	1,167	1,302	1,430	1,377	1,270	2,263	1,099	1,251	927	0
Hardwoods:													
Select white oaks	3	0	0	0	10	0	0	4	0	100	0	0	0
Select red oaks	10	0	78	0	37	0	8	0	12	60	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	1	0	0	0	10	0	0	0	0	0	0	0	0
Ash	2	0	0	0	0	0	24	0	0	0	0	0	0
Balsam poplar	10	0	0	0	0	47	27	0	4	0	0	0	0
Paper birch	66	0	39	0	158	24	31	0	200	0	74	0	0
Bigtooth aspen	13	0	0	0	15	0	0	0	48	0	33	0	0
Quaking aspen	87	0	0	0	142	54	247	48	171	0	12	227	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	1	0	0	0	0	0	8	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	2	0	0	0	0	0	0	0	9	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	195	0	118	0	373	125	346	52	443	160	119	227	0
Total all species	1,519	162	162	1,167	1,675	1,556	1,723	1,322	2,707	1,259	1,369	1,154	0
Number of plots	50	5	2	3	4	7	4	9	10	1	4	1	0
Standard error ^{3/}	149	141	73	287	577	206	341	306	320	R	399	R	0
Average basal area	98	18	62	102	96	113	117	80	137	94	107	128	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 115.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

White pine forest type					All site index classes								
(In cubic feet per acre)													
Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	766	0	0	0	517	605	651	533	586	1,329	1,228	1,228	0
Red pine	344	0	0	0	41	377	360	582	187	0	0	1,350	0
Jack pine	71	0	0	0	60	176	0	38	110	0	0	0	0
White spruce	27	0	0	0	249	0	0	0	78	0	0	0	0
Black spruce	12	0	0	0	0	0	88	0	0	0	0	0	0
Balsam fir	65	0	0	0	39	22	106	0	0	71	281	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,284	0	0	0	905	1,180	1,205	1,153	961	1,400	1,509	2,578	0
Hardwoods:													
Select white oaks	15	0	0	0	0	10	0	93	0	0	0	0	0
Select red oaks	5	0	0	0	0	0	0	0	0	80	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	12	0	0	0	0	0	0	0	0	0	89	0	0
Soft maple	2	0	0	0	0	0	16	0	0	0	0	0	0
Ash	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam poplar	2	0	0	0	0	8	0	0	0	0	0	0	0
Paper birch	128	0	0	0	158	143	138	55	54	161	244	55	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	68	0	0	0	0	9	326	43	83	79	0	0	0
Basswood	24	0	0	0	0	0	0	0	0	224	66	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	257	0	0	0	158	169	479	190	137	544	400	55	0
Total all species	1,541	0	0	0	1,063	1,350	1,684	1,343	1,098	1,945	1,909	2,632	0
Number of plots	15	0	0	0	1	4	2	2	2	1	2	1	0
Standard error ^{3/}	165	0	0	0	R	205	627	411	79	R	880	R	0
Average basal area	103	0	0	0	82	96	113	92	99	98	109	153	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 116.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Black spruce forest type - Site index class 0-50

(In cubic feet per acre)

Northern Pine Unit
Black Spruce
Site Index 0-50

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	0	0	0	0	0	2	0	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	2	0	0	0	0	3	0	0	34	0	0	0	0
White spruce	1	0	0	0	1	0	4	7	0	0	0	0	0
Black spruce	234	75	88	78	90	262	414	373	338	542	481	225	575
Balsam fir	14	4	0	2	6	44	50	0	0	17	0	36	0
Tamarack	55	2	36	48	41	102	57	116	75	51	57	9	0
Northern white-cedar	14	3	0	3	2	12	44	0	57	31	0	47	33
Other softwoods	1	0	0	0	0	0	0	9	0	0	0	0	0
Total	321	84	124	131	141	426	569	504	504	641	538	317	608
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	1	1	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	1	0	0	0	0	0	6	0	0	0	0	0	0
Ash	2	0	0	0	0	13	0	0	0	0	9	7	0
Balsam poplar	1	0	0	0	0	2	4	0	0	0	0	0	0
Paper birch	4	0	0	1	4	5	2	4	0	21	0	0	0
Bigtooth aspen	1	0	0	4	0	0	0	0	0	0	0	0	0
Quaking aspen	7	4	0	6	9	23	21	0	0	0	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	17	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	16	4	0	11	14	43	33	4	0	21	9	24	0
Total all species	337	88	124	143	155	468	602	508	504	662	547	340	608
Number of plots	161	12	11	36	24	15	18	13	8	16	3	3	2
Standard error	31	48	42	24	33	128	139	105	155	114	135	134	339
Average basal area	64	22	22	47	55	80	102	75	66	93	115	60	111

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 117.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Black spruce forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	0	0	0	0	0	2	0	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	2	0	0	0	0	3	0	0	34	0	0	0	0
White spruce	1	0	0	0	1	0	5	6	0	0	0	0	0
Black spruce	233	71	87	80	96	262	408	413	338	542	481	225	575
Balsam fir	14	9	0	2	9	44	47	5	0	17	0	36	0
Tamarack	54	2	50	44	42	102	54	113	75	51	57	9	0
Northern white-cedar	15	2	0	7	2	12	42	0	57	31	0	47	33
Other softwoods	1	0	0	0	0	0	0	8	0	0	0	0	0
Total	319	84	137	134	151	426	556	545	504	641	538	317	608
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	1	1	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	1	0	0	0	0	0	6	0	0	0	0	0	0
Ash	1	0	0	0	0	13	0	0	0	0	9	7	0
Balsam poplar	1	0	0	0	0	2	3	0	0	0	0	0	0
Paper birch	4	0	0	2	4	5	2	4	0	21	0	0	0
Bigtooth aspen	1	0	0	3	0	0	0	0	0	0	0	0	0
Quaking aspen	9	3	0	6	23	23	20	0	0	0	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	17	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	17	3	0	12	28	43	31	4	0	21	9	24	0
Total all species	337	87	137	146	179	468	587	549	504	662	547	340	608
Number of plots	171	14	13	39	25	15	19	14	8	16	3	3	2
Standard error	30	42	41	22	40	128	132	105	155	114	135	134	339
Average basal area	63	19	30	48	57	80	100	74	66	93	115	60	111

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 118.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Balsam fir forest type - Site index class 0-50

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	6	0	0	4	0	0	0	39	0	0	0	0	0
Red pine	13	0	0	11	0	0	8	61	0	0	0	136	0
Jack pine	7	0	0	0	0	11	33	6	0	0	0	0	0
White spruce	10	0	5	0	4	0	6	15	132	0	0	0	0
Black spruce	39	0	45	29	50	15	53	89	0	0	0	0	0
Balsam fir	191	9	48	61	79	359	208	246	721	801	0	287	0
Tamarack	28	65	17	14	18	0	92	39	0	0	0	0	0
Northern white-cedar	57	29	19	107	23	32	79	0	335	102	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	350	103	134	227	175	417	479	495	1,188	903	0	423	0
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	1	0	0	0	0	2	0	3	0	0	0	0	0
Ash	16	0	2	18	0	10	17	60	0	0	0	42	0
Balsam poplar	9	0	3	3	10	25	27	0	0	0	0	0	0
Paper birch	38	0	5	7	68	50	36	54	122	274	0	61	0
Bigtooth aspen	1	0	0	0	0	4	0	0	0	0	0	0	0
Quaking aspen	36	10	21	6	74	42	0	97	90	0	0	52	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	3	0	1	0	0	1	5	0	24	0	0	40	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	103	10	31	34	152	133	85	214	236	274	0	194	0
Total all species	453	113	165	261	327	551	564	709	1,424	1,176	0	618	0
Number of plots	69	4	13	12	6	11	9	9	3	1	0	1	0
Standard error ^{3/}	44	49	39	55	81	75	85	97	148	R	0	R	0
Average basal area	69	15	42	69	80	76	79	76	130	165	0	49	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.

^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 119.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Balsam fir forest type						Site index class 51-60							
(In cubic feet per acre)													
Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	10	0	0	0	0	7	11	59	0	0	0	0	0
Red pine	5	0	0	59	0	0	0	0	0	0	0	0	0
Jack pine	11	0	0	34	0	0	35	0	0	0	0	0	0
White spruce	34	0	0	0	0	38	37	136	0	0	0	0	0
Black spruce	38	0	0	0	29	31	48	63	85	0	0	0	0
Balsam fir	512	0	99	60	64	554	779	593	599	0	0	0	0
Tamarack	41	0	0	70	74	0	55	237	0	0	0	0	0
Northern white-cedar	73	0	0	91	143	4	21	0	492	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	723	0	99	315	310	633	986	1,088	1,177	0	0	0	0
Hardwoods:													
Select white oaks	1	0	0	0	0	4	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	4	0	0	7	0	3	0	0	24	0	0	0	0
Ash	14	47	0	0	47	4	33	0	11	0	0	0	0
Balsam poplar	67	0	0	0	16	123	7	0	188	0	0	0	0
Paper birch	108	0	0	218	114	72	147	211	63	0	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	97	0	0	0	0	178	47	47	157	0	0	0	0
Basswood	5	0	0	18	0	9	0	0	0	0	0	0	0
Elm	12	0	51	0	0	16	13	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	308	47	51	243	177	407	247	259	443	0	0	0	0
Total all species	1,031	47	150	558	487	1,041	1,233	1,347	1,620	0	0	0	0
Number of plots	38	1	2	3	2	14	9	3	4	0	0	0	0
Standard error ^{3/}	106	R	150	157	11	166	151	92	497	0	0	0	0
Average basal area	99	8	21	81	79	99	119	90	147	0	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 120.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Balsam fir forest type - Site index class 61-70

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	16	0	0	0	0	0	79	21	0	0	0	0	0
Red pine	80	49	0	0	43	26	394	20	0	0	0	0	0
Jack pine	5	39	0	0	0	0	0	0	0	0	0	0	0
White spruce	39	0	0	0	121	26	26	0	0	0	0	0	0
Black spruce	35	37	0	161	21	102	0	0	0	0	0	0	0
Balsam fir	670	169	0	292	473	866	420	1,239	0	0	0	0	0
Tamarack	26	0	0	0	24	0	149	0	0	0	0	0	0
Northern white-cedar	5	0	0	0	0	41	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	877	294	0	453	682	1,061	1,067	1,281	0	0	0	0	0
Hardwoods:													
Select white oaks	11	0	0	0	0	0	0	41	0	0	0	0	0
Select red oaks	3	0	0	0	0	22	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	4	0	0	0	0	0	0	15	0	0	0	0	0
Ash	5	0	0	0	19	0	0	0	0	0	0	0	0
Balsam poplar	80	0	0	0	129	0	0	170	0	0	0	0	0
Paper birch	207	30	0	330	148	457	224	190	0	0	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	171	30	0	0	94	308	406	176	0	0	0	0	0
Basswood	5	0	0	0	0	0	0	19	0	0	0	0	0
Elm	5	0	0	0	0	0	0	17	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	490	61	0	330	389	787	630	628	0	0	0	0	0
Total all species	1,367	355	0	782	1,072	1,848	1,697	1,908	0	0	0	0	0
Number of plots	15	2	0	1	4	2	2	4	0	0	0	0	0
Standard error ^{3/}	194	257	0	R	151	451	687	361	0	0	0	0	0
Average basal area	109	36	0	139	83	156	154	118	0	0	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	9	0	0	3	0	4	11	40	0	0	0	0	0
Red pine	18	12	0	16	14	2	42	35	0	0	0	136	0
Jack pine	9	10	0	5	0	4	38	3	0	0	0	0	0
White spruce	26	0	4	0	42	38	35	30	56	0	0	0	0
Black spruce	40	9	39	59	37	29	40	55	49	0	0	0	0
Balsam fir	375	70	55	176	208	515	467	639	652	801	0	287	0
Tamarack	30	32	15	22	29	0	71	59	0	0	0	0	0
Northern white-cedar	56	14	16	82	35	24	43	16	425	102	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	562	148	129	363	367	615	746	877	1,181	903	0	423	0
Hardwoods:													
Select white oaks	4	0	0	0	0	9	2	12	0	0	0	0	0
Select red oaks	0	0	0	0	0	2	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	2	0	0	1	0	2	3	5	14	0	0	0	0
Ash	13	6	2	11	14	6	22	30	6	0	0	42	0
Balsam poplar	35	0	3	2	51	74	13	43	107	0	0	0	0
Paper birch	89	52	4	92	102	88	99	146	88	274	0	61	0
Bigtooth aspen	0	0	0	0	0	2	0	0	0	0	0	0	0
Quaking aspen	78	13	18	52	68	132	66	108	128	0	0	52	0
Basswood	5	0	0	3	0	4	0	26	0	0	0	0	0
Elm	6	0	7	0	0	10	7	4	10	0	0	40	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	233	71	34	161	235	328	212	373	354	274	0	194	0
Total all species	794	219	163	524	602	943	958	1,250	1,536	1,176	0	618	0
Number of plots	132	8	15	19	12	28	23	18	7	1	0	1	0
Standard error ^{3/}	58	82	36	149	118	120	112	171	274	R	0	R	0
Average basal area	84	24	39	81	81	94	101	94	139	165	0	49	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.

^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 122.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Northern white-cedar forest type - Site index class 0-50

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	1	0	0	0	0	21	0	0	0	0	0	0	2
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	1	0	0	0	0	0	7	0	0	0	0	0	0
White spruce	3	0	0	11	0	0	0	8	6	1	0	0	2
Black spruce	68	0	0	51	180	98	69	117	5	88	54	65	47
Balsam fir	42	0	61	10	128	26	77	42	51	29	9	35	45
Tamarack	45	0	96	5	0	37	31	97	34	45	44	31	41
Northern white-cedar	442	220	43	166	304	258	372	310	343	480	590	404	744
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	602	220	200	243	612	441	556	575	439	643	697	535	881
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	18	0	0	0	0	107	0	7	28	34	0	5	33
Balsam poplar	12	0	0	3	0	17	39	20	22	0	4	11	3
Paper birch	30	0	0	4	48	144	24	15	84	1	53	13	38
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	5	0	0	0	0	0	0	11	11	3	10	4	6
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	2
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	65	0	0	7	48	268	63	52	146	37	68	31	82
Total all species	667	220	200	250	661	709	619	628	585	680	765	566	963
Number of plots	121	1	2	6	3	3	11	19	11	16	8	18	23
Standard error ^{3/}	46	R	104	76	362	282	97	71	154	114	231	105	139
Average basal area	118	71	47	68	107	136	115	112	95	134	120	123	140

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.

^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 123.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Northern white-cedar forest type						All site index classes							
(In cubic feet per acre)													
Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	1	0	0	0	0	21	0	0	0	0	0	0	2
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	1	0	0	0	0	0	6	0	0	0	0	0	0
White spruce	3	0	0	11	0	0	0	7	6	1	0	0	2
Black spruce	71	0	0	51	180	98	67	127	5	88	54	65	47
Balsam fir	46	0	61	10	128	26	89	60	51	29	9	35	45
Tamarack	45	0	96	5	0	37	38	88	34	45	44	31	41
Northern white-cedar	442	220	43	166	304	258	355	336	343	480	590	404	744
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	609	220	200	243	612	441	555	618	439	643	697	535	881
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	17	0	0	0	0	107	0	7	28	34	0	5	33
Balsam poplar	12	0	0	3	0	17	41	18	22	0	4	11	3
Paper birch	29	0	0	4	48	144	22	13	84	1	53	13	38
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	5	0	0	0	0	0	0	10	11	3	10	4	6
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	2
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	64	0	0	7	48	268	63	47	146	37	68	31	82
Total all species	673	220	200	250	661	709	618	665	585	680	765	566	963
Number of plots	124	1	2	6	3	3	12	21	11	16	8	18	23
Standard error ^{3/}	45	R	104	76	362	282	88	69	154	114	231	105	139
Average basal area	118	71	47	168	107	136	110	113	95	134	120	123	140

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.

^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 124.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Tamarack forest type - Site index class 0-50

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	2	0	0	0	0	3	3	0	16	3	0	0	0
Red pine	2	0	0	0	0	0	0	0	21	3	0	0	0
Jack pine	4	0	0	0	0	29	0	34	0	0	0	7	0
White spruce	1	0	0	0	0	5	5	0	3	0	0	0	0
Black spruce	44	4	10	24	39	73	72	34	63	39	0	89	60
Balsam fir	8	0	0	0	0	0	20	31	38	9	0	0	0
Tamarack	319	82	109	112	112	243	296	428	350	421	878	605	547
Northern white-cedar	13	0	0	10	0	0	34	0	7	17	0	15	45
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	393	86	120	147	151	353	431	526	498	490	878	716	652
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	4	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	5	0	0	0	0
Ash	0	0	0	0	0	0	0	0	0	3	0	0	0
Balsam poplar	3	0	1	0	0	0	0	35	2	0	0	0	11
Paper birch	8	0	0	4	5	0	20	28	38	2	0	2	3
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	2	0	0	0	3	0	0	0	9	0	0	0	6
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	2	0	0	3	0	0	0	5	10	3	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	16	4	2	7	7	0	20	68	64	8	0	2	21
Total all species	409	90	121	154	158	353	451	594	562	499	878	718	673
Number of plots	154	12	23	13	9	8	16	7	14	17	4	17	14
Standard error	29	33	33	36	44	90	69	152	109	64	219	79	88
Average basal area	55	27	36	43	46	66	57	54	70	60	82	68	69

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.

^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 125.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota 1977^{1/}

Tamarack forest type - Site index class 51-60

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	3	0	15	0	0	0	0	0	22	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	2	0	0	0	0	0	4	0	0	0	0	0	0
Black spruce	50	0	38	0	0	150	39	230	56	0	0	0	0
Balsam fir	9	0	0	9	0	0	15	0	19	0	0	0	0
Tamarack	650	0	96	170	1,116	734	855	1,055	744	0	0	1,152	0
Northern white-cedar	2	0	0	0	0	0	0	0	33	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	716	0	149	179	1,116	883	912	1,285	874	0	0	1,152	0
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	1	0	0	4	0	0	0	0	0	0	0	0	0
Ash	8	0	0	0	0	0	0	0	106	0	0	0	0
Balsam poplar	0	0	0	0	0	0	0	0	0	0	0	0	0
Paper birch	5	0	0	0	0	0	12	0	0	0	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	18	0	94	31	0	0	4	0	0	0	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	32	0	94	36	0	0	17	0	106	0	0	0	0
Total all species	748	0	243	214	1,116	883	929	1,285	980	0	0	1,152	0
Number of plots	27	0	3	5	1	3	11	1	2	0	0	1	0
Standard error ^{3/}	109	0	121	104	R	278	196	R	186	0	0	R	0
Average basal area	58	0	45	26	82	60	68	90	75	0	0	60	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 126.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Tamarack forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	3	0	2	0	0	2	2	0	17	6	0	0	0
Red pine	2	0	0	0	0	0	0	0	18	3	0	0	0
Jack pine	3	0	0	0	0	19	0	29	0	0	0	7	0
White spruce	1	0	0	0	0	3	6	0	3	0	0	0	0
Black spruce	45	4	13	18	45	86	56	59	63	42	0	84	60
Balsam fir	8	0	0	2	0	0	16	27	35	8	0	0	0
Tamarack	379	82	120	128	262	464	532	506	399	420	878	635	547
Northern white-cedar	11	0	0	8	0	0	18	0	10	16	0	14	45
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	451	86	134	156	308	575	630	621	545	495	878	740	652
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	4	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	1	0	0	1	0	0	0	0	5	0	0	0	0
Ash	1	0	0	0	0	0	0	0	13	3	0	0	0
Balsam poplar	8	0	8	0	0	0	28	31	2	0	0	0	11
Paper birch	8	0	2	3	4	0	15	24	33	2	0	2	3
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	6	0	12	9	2	0	14	0	8	0	0	0	6
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	2	0	0	2	0	0	3	4	8	3	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	26	4	23	15	6	0	59	59	70	8	0	2	21
Total all species	477	90	156	170	314	575	689	680	615	503	878	742	673
Number of plots	189	12	28	18	11	12	30	8	16	18	4	18	14
Standard error	30	33	35	38	111	133	93	157	103	60	219	79	88
Average basal area	56	27	42	38	52	66	63	59	71	59	82	68	69

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.

^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 127.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

White spruce forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	39	0	0	0	0	0	0	48	0	375	0	0	0
Red pine	30	0	126	0	0	0	0	117	0	0	0	0	0
Jack pine	103	0	0	62	0	0	126	239	0	0	0	0	0
White spruce	240	0	0	55	0	0	384	294	0	266	0	0	0
Black spruce	19	0	0	0	0	0	0	114	0	0	0	0	0
Balsam fir	90	0	0	48	0	0	94	238	0	33	0	0	0
Tamarack	16	0	0	0	0	0	0	97	0	0	0	0	0
Northern white-cedar	33	0	0	0	0	0	43	0	0	179	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	570	0	126	165	0	0	647	1,147	0	853	0	0	0
Hardwoods:													
Select white oaks	2	0	0	0	0	0	0	0	0	23	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam poplar	33	0	0	0	0	0	20	122	0	58	0	0	0
Paper birch	24	0	0	0	0	0	12	33	0	158	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	95	0	0	94	0	0	181	0	0	51	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	154	0	0	94	0	0	212	155	0	290	0	0	0
Total all species	724	0	126	259	0	0	859	1,302	0	1,143	0	0	0
Number of plots	12	1	1	2	0	0	5	2	0	1	0	0	0
Standard error ^{3/}	176	R	R	259	0	0	239	523	0	R	0	0	0
Average basal area	71	0	11	58	0	0	88	77	0	128	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 128.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}Northern Pine Unit
Oak-hickory
Site Index 0-50

Oak-hickory forest type - Site index class 0-50

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	3	2	0	0	0	0	0	0	5	18	12	14	0
Red pine	22	7	12	0	0	29	44	0	10	0	0	138	0
Jack pine	28	13	30	0	173	42	23	7	24	0	0	0	0
White spruce	3	0	0	0	0	0	3	12	0	0	0	10	0
Black spruce	1	0	0	0	0	0	0	0	5	0	0	0	0
Balsam fir	2	0	0	0	0	21	0	0	0	0	0	0	0
Tamarack	1	0	0	0	0	0	0	0	5	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	60	23	42	0	173	91	70	19	50	18	12	163	0
Hardwoods:													
Select white oaks	148	12	77	153	33	138	77	204	248	320	322	83	0
Select red oaks	188	50	5	0	226	124	296	242	183	235	219	130	0
Other red oaks	0	0	0	0	0	5	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	4	0	0
Soft maple	3	0	0	0	0	13	0	2	0	0	17	0	0
Ash	9	0	9	0	0	0	0	9	17	10	55	0	0
Balsam poplar	5	0	0	0	56	0	0	13	0	0	0	0	0
Paper birch	48	8	20	0	0	100	51	106	37	28	34	14	0
Bigtooth aspen	8	4	0	0	27	34	3	0	15	0	0	0	0
Quaking aspen	74	0	47	0	13	79	103	71	127	38	40	130	0
Basswood	21	0	0	0	0	43	6	12	40	44	76	0	0
Elm	9	0	12	0	0	5	15	16	11	15	2	0	0
Select hardwoods	1	0	0	0	0	0	0	0	8	0	0	0	0
Other hardwoods	1	0	0	0	0	0	0	0	0	0	9	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	515	74	170	153	356	541	551	673	686	690	779	356	0
Total all species	575	96	213	153	529	632	620	691	736	708	791	519	0
Number of plots	83	7	6	1	5	9	18	11	12	4	6	4	0
Standard error ^{3/}	38	38	85	R	136	119	57	135	86	148	96	74	0
Average basal area	72	22	45	45	75	77	81	78	85	86	87	59	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 129.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Oak-hickory forest type - Site index class 51-60

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	11	0	0	0	0	0	12	0	83	0	0	0	0
Red pine	17	0	0	0	0	4	14	37	69	0	0	0	0
Jack pine	45	95	41	0	0	49	0	130	0	0	0	0	0
White spruce	1	0	0	0	0	3	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	0	0	0	0	0	0	0	0	0	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	74	95	41	0	0	56	26	168	152	0	0	0	0
Hardwoods:													
Select white oaks	83	0	29	0	94	80	78	45	142	0	410	0	0
Select red oaks	453	0	71	0	51	420	671	663	658	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	6	0	0	0	0	4	16	9	0	0	0	0	0
Soft maple	9	0	0	0	0	0	25	14	18	0	0	0	0
Ash	6	0	0	0	30	3	19	0	0	0	0	0	0
Balsam poplar	0	0	0	0	0	0	0	0	0	0	0	0	0
Paper birch	144	0	27	0	22	59	256	406	102	0	0	0	0
Bigtooth aspen	48	0	0	0	0	37	64	77	101	0	0	0	0
Quaking aspen	103	0	0	0	173	100	190	40	145	0	0	0	0
Basswood	42	0	0	0	54	7	66	108	11	0	294	0	0
Elm	13	0	0	0	30	7	13	5	7	0	222	0	0
Select hardwoods	9	0	0	0	90	5	6	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	916	0	128	0	544	723	1,406	1,367	1,185	0	926	0	0
Total all species	991	95	169	0	544	779	1,431	1,534	1,337	0	926	0	0
Number of plots	45	2	3	0	3	16	8	7	5	0	1	0	0
Standard error ^{3/}	92	95	44	0	170	78	238	233	174	0	R	0	0
Average basal area	94	12	47	0	71	80	128	119	125	0	82	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.Northern Pine Unit
Oak-hickory
Site Index 51-60

Table 130.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Oak-hickory forest type - Site index class 61-70

(In cubic feet per acre)

Northern Pine Unit
Oak-hickory
Site Index 61-70

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	4	0	0	0	0	10	0	0	0	0	0	0	0
Red pine	6	0	174	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	5	0	0	22	0	0	0	14	0	0	0	0	0
Tamarack	3	0	0	0	0	9	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	18	0	174	22	0	19	0	14	0	0	0	0	0
Hardwoods:													
Select white oaks	131	0	0	54	98	182	63	232	62	0	0	0	0
Select red oaks	510	0	412	92	291	649	532	545	1,168	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	14	0	0	0	28	10	17	33	0	0	0	0	0
Soft maple	30	0	0	9	24	57	0	30	0	0	0	0	0
Ash	12	0	0	0	14	29	0	0	0	0	0	0	0
Balsam poplar	3	0	0	0	0	7	0	0	0	0	0	0	0
Paper birch	141	0	125	47	63	192	168	161	0	0	0	0	0
Bigtooth aspen	45	0	0	0	0	41	138	39	0	0	0	0	0
Quaking aspen	127	0	0	0	225	128	229	117	0	0	0	0	0
Basswood	36	0	0	0	105	44	26	26	0	0	0	0	0
Elm	12	0	0	0	0	24	0	18	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,061	0	537	202	849	1,363	1,173	1,201	1,230	0	0	0	0
Total all species	1,079	0	711	224	849	1,382	1,173	1,214	1,230	0	0	0	0
Number of plots	29	0	1	4	3	11	5	4	1	0	0	0	0
Standard error ^{3/}	103	0	R	67	230	135	289	109	R	0	0	0	0
Average basal area	94	0	86	35	76	113	92	119	94	0	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 131.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Oak-hickory forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	5	2	0	0	0	3	3	0	27	14	10	11	0
Red pine	17	6	22	0	0	8	26	12	26	0	0	130	0
Jack pine	27	32	49	0	62	30	12	45	16	0	0	0	0
White spruce	2	0	0	0	0	1	2	6	0	0	0	8	0
Black spruce	0	0	0	0	0	0	0	0	4	0	0	0	0
Balsam fir	2	0	0	18	0	5	0	2	0	0	0	0	0
Tamarack	1	0	0	0	0	2	0	0	4	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	54	39	72	18	62	49	43	65	76	14	10	150	0
Hardwoods:													
Select white oaks	123	10	50	74	70	116	68	159	208	288	335	196	0
Select red oaks	354	39	60	74	263	462	484	431	370	256	188	304	0
Other red oaks	0	0	0	0	0	1	0	0	0	0	0	0	0
Hickory	1	0	0	0	0	2	2	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	5	0	0	0	10	4	10	9	0	0	3	0	0
Soft maple	12	0	0	7	10	20	15	11	5	0	14	12	0
Ash	8	0	5	0	9	9	4	4	11	8	47	0	0
Balsam poplar	3	0	0	0	20	2	0	6	0	0	0	0	0
Paper birch	94	6	30	37	54	111	123	211	53	36	29	32	0
Bigtooth aspen	26	3	0	0	10	43	37	31	38	0	0	0	0
Quaking aspen	94	0	36	0	96	103	147	69	125	104	35	123	0
Basswood	36	0	0	0	34	55	28	45	30	43	108	0	0
Elm	10	0	7	0	10	11	11	13	9	12	34	0	0
Select hardwoods	4	0	0	0	19	2	7	0	5	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	8	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	771	57	187	192	606	941	936	990	854	746	800	668	0
Total all species	826	96	259	210	668	990	979	1,055	930	761	811	817	0
Number of plots	169	9	11	5	14	39	34	22	18	5	7	5	0
Standard error	43	33	66	54	89	87	103	128	98	126	83	304	0
Average basal area	83	20	51	37	74	91	96	98	96	85	86	75	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 132.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Elm-ash-cottonwood forest type - Site index class 0-50

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	1	0	0	0	0	0	0	0	6	6	0	0	0
Red pine	1	0	0	0	0	0	0	0	0	5	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	3	0	0	0	0	0	17	0	5	6	0	0	0
Black spruce	4	0	0	5	0	0	0	0	4	13	0	9	0
Balsam fir	37	0	23	11	81	44	44	19	35	39	64	76	0
Tamarack	4	0	0	9	0	0	0	0	0	18	0	6	0
Northern white-cedar	39	26	0	10	0	0	30	14	17	51	43	202	0
Other softwoods	1	0	0	0	0	0	0	0	7	0	0	0	0
Total	89	26	23	35	81	44	92	32	75	137	107	292	0
Hardwoods:													
Select white oaks	9	0	0	3	0	11	36	0	0	19	33	0	0
Select red oaks	1	0	0	0	0	0	0	11	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	3	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	16	0	0	0	0	0	0	0	5	0	0	0	456
Ash	263	108	142	140	90	274	342	451	292	279	357	410	304
Balsam poplar	25	27	0	13	40	26	32	36	63	7	0	22	54
Paper birch	32	0	19	10	24	43	34	23	72	32	20	76	0
Bigtooth aspen	1	0	0	0	0	0	6	0	0	0	0	0	0
Quaking aspen	24	0	0	19	21	40	74	52	48	11	0	0	0
Basswood	29	0	0	0	0	0	49	89	5	98	0	25	70
Elm	62	0	29	19	11	12	99	56	112	93	40	64	265
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	1	0	0	0	0	0	0	0	0	5	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	462	135	190	206	187	405	672	717	596	544	451	597	1,149
Total all species	552	162	213	241	268	449	763	750	671	682	559	890	1,149
Number of plots	87	5	6	14	6	4	9	6	9	11	5	9	3
Standard error	46	42	69	51	90	143	131	196	94	105	95	202	430
Average basal area	74	19	55	51	57	76	85	92	98	74	87	104	104

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 133.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Elm-ash-cottonwood forest type - Site index class 51-60

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	1	0	0	0	0	0	8	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	2	0	0	0	0	0	0	14	0	0	0	0	0
White spruce	9	0	0	0	0	9	8	34	15	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	48	0	94	0	0	0	63	53	81	10	81	165	0
Tamarack	8	100	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	28	0	0	0	0	0	27	0	9	37	165	308	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	97	100	94	0	0	9	106	100	106	47	246	473	0
Hardwoods:													
Select white oaks	10	0	0	0	0	0	20	17	8	30	0	0	0
Select red oaks	4	0	0	0	0	0	10	0	17	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	7	0	0	0	0	0	11	0	10	37	0	0	0
Hard maple	7	0	0	0	0	0	39	0	5	0	0	0	0
Soft maple	12	0	0	0	0	3	38	0	36	0	0	0	0
Ash	517	83	137	141	599	560	534	503	681	820	564	711	720
Balsam poplar	44	22	26	0	42	74	45	10	16	24	185	0	72
Paper birch	70	0	0	0	0	72	59	48	155	0	168	476	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	47	46	0	0	0	99	34	81	45	55	19	59	0
Basswood	11	0	8	77	0	6	22	0	29	5	0	0	0
Elm	121	17	6	0	22	134	66	141	271	92	75	37	972
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	1	0	0	0	0	0	0	5	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	850	169	176	219	663	949	878	804	1,272	1,063	1,010	1,283	1,763
Total all species	947	268	270	219	663	958	984	904	1,378	1,110	1,255	1,755	1,763
Number of plots	61	5	5	1	2	7	10	9	9	6	5	1	1
Standard error ^{3/}	76	98	74	R	345	188	149	124	160	87	514	R	R
Average basal area	86	29	35	45	83	88	102	82	105	96	114	128	124

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.Northern Pine Unit
Elm-ash-cottonwood
Site Index 51-60

Table 134.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Elm-ash-cottonwood forest type - Site index class 61-70

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	2	0	0	0	0	0	0	8	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	55	0	0	0	66	0	70	55	33	89	0	18	200
Tamarack	6	0	0	0	0	0	13	10	0	0	0	0	0
Northern white-cedar	43	0	0	0	232	0	22	26	0	0	0	172	158
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	107	0	0	0	298	0	104	99	33	89	0	190	358
Hardwoods:													
Select white oaks	19	0	0	0	0	72	6	20	78	24	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	4	0	0	0	0	0	0	15	0	0	0	0	0
Soft maple	56	0	74	0	0	0	117	15	112	0	95	0	0
Ash	661	0	375	0	268	887	536	931	348	578	875	698	1,161
Balsam poplar	70	0	0	0	90	0	138	45	113	26	0	0	0
Paper birch	48	0	81	0	0	0	65	52	34	54	0	54	42
Bigtooth aspen	20	0	0	0	0	0	0	8	0	0	0	225	0
Quaking aspen	46	0	68	0	159	0	52	57	0	74	0	0	0
Basswood	16	0	0	0	0	197	6	21	0	43	0	0	0
Elm	155	0	0	0	51	86	101	149	378	72	247	294	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	2	0	0	0	0	0	0	6	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,097	0	598	0	568	1,242	1,021	1,317	1,063	871	1,217	1,271	1,203
Total all species	1,204	0	598	0	866	1,242	1,125	1,416	1,095	961	1,217	1,462	1,560
Number of plots	38	0	1	0	2	1	11	10	4	3	2	3	1
Standard error ^{3/}	79	0	R	0	221	R	135	176	241	240	317	416	R
Average basal area	93	0	45	0	104	101	86	104	89	63	101	114	124

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 135.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Elm-ash-cottonwood forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	1	0	0	0	0	0	2	3	2	3	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	3	0	0	0
Jack pine	1	0	0	0	0	0	0	5	0	0	0	0	0
White spruce	4	0	0	0	0	4	7	12	8	3	0	0	0
Black spruce	2	0	0	4	0	0	0	0	2	7	0	6	0
Balsam fir	46	0	51	11	56	25	64	46	56	36	60	69	40
Tamarack	6	50	0	8	0	0	7	4	0	9	0	4	0
Northern white-cedar	35	13	0	9	42	7	23	14	10	37	87	203	32
Other softwoods	0	0	0	0	0	0	0	0	3	0	0	0	0
Total	95	63	51	33	98	36	103	83	80	98	147	283	72
Hardwoods:													
Select white oaks	13	0	0	2	0	8	17	14	16	40	14	0	0
Select red oaks	3	0	0	0	0	0	9	3	6	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	2	0	0	2	0	0	3	0	4	11	0	0	0
Hard maple	3	0	0	0	0	0	11	6	2	0	0	0	0
Soft maple	28	0	6	0	0	10	81	6	34	0	16	0	274
Ash	433	96	159	140	237	547	456	661	475	494	530	500	558
Balsam poplar	47	25	11	13	75	51	81	30	77	14	77	16	47
Paper birch	51	0	16	9	13	100	55	44	91	25	78	102	8
Bigtooth aspen	4	0	0	0	0	0	4	3	0	0	0	52	0
Quaking aspen	35	23	6	18	40	57	53	64	35	32	8	5	0
Basswood	24	0	3	5	0	24	28	30	12	83	0	17	42
Elm	102	9	17	18	23	98	93	124	216	95	89	115	353
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	1	0	0	0	0	0	0	4	0	2	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	744	152	218	207	388	894	892	988	968	796	812	806	1,282
Total all species	839	215	269	239	487	930	996	1,072	1,048	894	959	1,088	1,354
Number of plots	197	10	12	15	11	15	34	25	24	21	12	13	5
Standard error	41	53	54	48	107	141	74	109	118	88	231	182	269
Average basal area	83	24	46	50	74	87	93	93	97	80	101	108	112

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 136.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}Northern Pine Unit
Maple-basswood
Site Index 0-50

Maple-basswood forest type - Site index class 0-50

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	13	0	61	0	0	15	0	25	16	0	9	39	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	1	0	0	0	0	5	0	0	0	0	0	0	0
White spruce	4	0	0	0	0	0	0	13	0	0	0	12	26
Black spruce	1	0	0	0	0	7	0	0	0	0	0	0	0
Balsam fir	52	0	0	0	41	39	48	78	57	73	73	154	0
Tamarack	1	0	0	0	0	7	0	0	0	0	0	0	0
Northern white-cedar	1	0	0	0	0	0	0	0	12	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	73	0	61	0	41	73	48	116	85	73	82	205	26
Hardwoods:													
Select white oaks	33	0	0	0	14	26	77	61	118	0	5	0	81
Select red oaks	34	0	19	0	20	4	54	46	31	4	4	28	27
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	8	0	0	0	0	0	0	0	4	0	29	100	0
Hard maple	91	76	72	30	0	15	89	39	135	111	176	159	189
Soft maple	26	0	84	0	0	16	31	28	10	0	81	62	0
Ash	67	0	34	48	0	46	135	98	38	41	100	59	41
Balsam poplar	17	0	0	0	0	20	20	81	0	0	7	0	0
Paper birch	57	0	55	67	58	68	58	35	87	79	27	112	22
Bigtooth aspen	8	0	0	0	0	0	31	5	23	0	0	0	0
Quaking aspen	52	29	0	47	0	63	35	175	37	26	6	0	53
Basswood	170	0	0	12	91	203	85	103	239	355	112	121	462
Elm	100	24	0	36	9	67	57	278	70	129	51	45	200
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	1	33	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	662	162	263	240	192	528	671	949	792	745	598	687	1,074
Total all species	735	162	325	240	232	601	719	1,065	878	818	679	892	1,100
Number of plots	74	2	3	4	2	11	10	10	9	7	8	3	5
Standard error	50	11	12	81	151	123	99	207	124	74	66	174	150
Average basal area	87	36	48	59	60	80	86	103	99	90	89	100	107

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 137.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Maple-basswood forest type - Site index class 51-60

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	16	0	0	0	10	7	28	7	29	0	0	0	122
Red pine	3	0	0	0	0	0	5	9	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	2	0	0	0	0	0
White spruce	6	0	0	0	28	3	3	10	11	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	48	18	0	0	46	68	42	80	42	0	57	0	0
Tamarack	2	0	0	0	0	13	0	0	0	0	0	0	0
Northern white-cedar	3	37	0	0	0	0	1	13	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	78	55	0	0	84	91	79	119	82	0	57	0	122
Hardwoods:													
Select white oaks	47	0	0	0	19	22	47	76	92	29	11	21	175
Select red oaks	57	0	0	0	25	31	125	47	48	0	42	0	0
Other red oaks	1	0	0	0	0	0	0	4	0	0	0	0	0
Hickory	1	0	0	0	11	0	0	0	0	0	0	0	0
Yellow birch	4	0	0	0	0	3	7	3	9	0	7	0	0
Hard maple	130	0	10	0	88	55	181	105	147	149	337	187	0
Soft maple	43	0	75	38	29	30	34	62	33	0	46	290	0
Ash	100	208	97	29	58	114	71	113	127	57	147	207	72
Balsam poplar	26	65	50	0	16	29	16	14	0	301	80	0	20
Paper birch	96	61	9	55	23	146	123	131	68	0	80	24	0
Bigtooth aspen	14	0	0	0	0	0	22	37	11	0	0	0	0
Quaking aspen	68	0	12	26	126	34	81	105	70	0	55	0	0
Basswood	216	0	0	39	211	263	219	236	187	537	263	58	462
Elm	89	132	18	15	86	30	47	138	175	38	94	134	345
Select hardwoods	2	0	0	0	0	0	3	8	0	0	0	0	0
Other hardwoods	3	0	0	0	0	0	0	0	0	60	11	0	54
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	896	466	271	202	691	757	977	1,080	968	1,172	1,173	922	1,128
Total all species	975	521	271	202	775	847	1,055	1,199	1,049	1,172	1,230	922	1,250
Number of plots	115	2	4	4	9	17	31	19	15	2	8	2	2
Standard error	44	121	127	66	100	88	76	111	116	818	138	264	157
Average basal area	100	64	54	40	88	101	104	106	111	100	117	102	127

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.Northern Pine Unit
Maple-basswood
Site Index 51-60

Table 138.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Maple-basswood forest type - Site index class 61-70

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	5	0	0	0	0	6	0	7	22	0	0	0	0
Red pine	0	0	0	0	0	2	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	2	0	0	0	24	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	37	0	0	0	27	41	36	69	5	14	19	0	241
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	43	0	0	0	51	48	36	76	27	14	19	0	241
Hardwoods:													
Select white oaks	52	0	0	47	0	64	56	15	97	214	14	0	0
Select red oaks	64	0	43	0	52	86	31	132	102	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	5	0	0	0	0	6	0	0	33	13	0	0	0
Hard maple	178	0	31	0	288	55	146	163	185	74	1,053	0	0
Soft maple	47	0	39	0	26	27	60	22	34	270	53	0	0
Ash	95	0	0	0	41	45	110	59	140	194	224	0	525
Balsam poplar	24	0	0	0	0	27	41	18	17	0	0	0	112
Paper birch	114	0	70	292	149	73	112	214	81	17	100	0	41
Bigtooth aspen	16	0	0	0	0	11	15	0	75	23	0	0	0
Quaking aspen	66	0	125	112	55	48	47	159	45	21	16	0	0
Basswood	328	0	15	126	45	474	413	290	327	109	365	0	0
Elm	148	0	36	0	131	69	125	220	152	354	138	0	1,075
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	4	0	0	0	0	0	2	4	0	81	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,143	0	360	577	787	985	1,157	1,295	1,286	1,369	1,963	0	1,753
Total all species	1,186	0	360	577	838	1,033	1,194	1,371	1,313	1,383	1,982	0	1,993
Number of plots	79	1	3	1	5	15	24	13	9	3	4	0	1
Standard error ^{3/}	61	R	84	R	195	103	96	117	206	383	129	0	R
Average basal area	107	4	60	75	73	110	107	118	114	128	129	0	131

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 139.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Maple-basswood forest type - Site index class 71-80

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	8	0	0	0	0	17	14	0	0	0	0	0	0
Red pine	4	0	0	0	0	0	13	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	28	0	0	0	0	56	17	0	65	74	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	87	0	0	0	0	86	136	39	230	111	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	25	0	0	0	0	57	0	0	0	161	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	152	0	0	0	0	216	181	39	296	346	0	0	0
Hardwoods:													
Select white oaks	8	0	0	0	0	0	6	0	41	25	43	0	0
Select red oaks	53	0	0	0	76	70	45	11	0	0	428	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	5	0	0	0	0	0	10	19	0	0	0	0	0
Hard maple	249	0	0	0	288	64	256	294	358	0	558	787	624
Soft maple	31	0	0	0	64	0	69	39	0	0	0	0	0
Ash	98	0	0	0	0	80	70	227	105	0	0	0	590
Balsam poplar	12	0	0	0	0	12	0	24	80	0	0	0	0
Paper birch	216	0	0	0	303	188	230	105	248	490	297	0	0
Bigtooth aspen	11	0	0	0	0	0	41	0	0	0	0	0	0
Quaking aspen	89	0	0	0	89	205	80	0	0	112	0	0	0
Basswood	454	0	0	0	480	373	512	366	246	752	1,242	122	212
Elm	149	0	0	0	16	171	13	271	179	410	106	0	601
Select hardwoods	2	0	0	0	0	0	0	15	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,377	0	0	0	1,316	1,163	1,332	1,371	1,257	1,788	2,673	909	2,028
Total all species	1,529	0	0	0	1,316	1,379	1,513	1,410	1,553	2,135	2,673	909	2,028
Number of plots	29	0	0	0	3	7	8	4	2	2	1	1	1
Standard error ^{3/}	104	0	0	0	132	197	124	204	266	1,109	R	R	R
Average basal area	118	0	0	0	117	116	118	107	113	152	150	98	112

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 140.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Maple-basswood forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	11	0	18	0	8	9	13	10	21	0	3	20	27
Red pine	1	0	0	0	0	1	3	4	0	0	0	0	0
Jack pine	0	0	0	0	0	1	0	1	0	0	0	0	0
White spruce	6	0	0	0	15	8	3	7	8	10	0	6	14
Black spruce	0	0	0	0	0	1	0	0	0	0	0	0	0
Balsam fir	49	7	0	0	44	55	49	73	46	52	53	77	27
Tamarack	1	0	0	0	0	6	0	0	0	0	0	0	0
Northern white-cedar	5	15	0	0	12	8	1	5	3	21	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	75	22	18	0	79	88	69	99	78	83	57	103	68
Hardwoods:													
Select white oaks	40	0	0	5	12	30	49	49	73	50	11	7	84
Select red oaks	54	0	19	0	31	60	76	68	75	2	38	14	15
Other red oaks	0	0	0	0	0	0	0	2	0	0	0	0	0
Hickory	0	0	0	0	4	0	0	0	0	0	0	0	0
Yellow birch	6	0	0	0	5	4	4	3	13	3	14	50	0
Hard maple	146	30	35	13	139	60	167	123	169	116	422	273	174
Soft maple	39	0	67	17	47	20	46	41	25	54	58	128	0
Ash	91	83	49	34	53	71	96	104	111	66	137	99	162
Balsam poplar	21	26	20	0	8	23	22	31	9	40	33	0	17
Paper birch	106	24	41	87	105	122	126	131	84	130	74	64	17
Bigtooth aspen	13	0	0	0	14	5	22	16	29	5	0	0	0
Quaking aspen	70	12	42	45	131	75	62	126	50	31	26	0	30
Basswood	270	0	5	37	205	319	329	234	255	445	272	101	383
Elm	114	63	18	23	94	68	78	203	144	190	87	67	374
Select hardwoods	1	0	0	0	0	0	1	5	0	0	0	0	0
Other hardwoods	2	13	0	0	0	0	1	1	0	24	4	0	12
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	975	251	295	261	849	856	1,080	1,138	1,036	1,155	1,176	802	1,267
Total all species	1,050	273	314	261	928	945	1,149	1,237	1,115	1,238	1,232	905	1,336
Number of plots	310	5	10	9	24	53	76	46	36	15	21	6	9
Standard error	32	112	53	58	91	63	60	74	83	202	140	104	154
Average basal area	101	41	54	52	93	102	105	109	109	111	110	100	115

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 141.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Aspen forest type - Site index class 0-50

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	1	0	0	0	0	0	0	6	0	0	0	0	0
Red pine	20	0	0	0	39	7	0	129	13	0	0	0	0
Jack pine	16	20	8	0	0	0	30	49	0	0	0	0	0
White spruce	4	1	0	8	8	0	0	24	0	0	0	0	0
Black spruce	2	0	0	0	20	0	0	0	0	0	0	0	0
Balsam fir	34	0	6	39	61	3	75	88	0	180	46	0	72
Tamarack	1	0	0	0	0	0	0	0	0	48	0	0	0
Northern white-cedar	3	0	0	24	0	0	0	9	0	34	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	81	22	15	70	127	10	105	305	13	262	46	0	72
Hardwoods:													
Select white oaks	15	4	0	0	14	9	17	28	71	0	0	157	73
Select red oaks	22	0	0	0	38	24	52	61	29	0	0	0	54
Other red oaks	1	0	0	0	0	8	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	4	0	0	0	0	0	0	0	40	0	56	0	138
Soft maple	3	0	0	0	16	3	9	5	0	0	0	0	0
Ash	13	0	6	7	17	24	0	0	24	39	495	0	0
Balsam poplar	27	12	10	16	65	8	48	33	50	32	0	145	0
Paper birch	38	0	5	17	21	57	96	81	62	0	0	0	221
Bigtooth aspen	15	0	4	0	5	45	55	13	0	0	43	0	0
Quaking aspen	163	49	50	8	106	245	296	313	349	203	0	173	717
Basswood	16	0	6	0	8	0	36	4	71	0	0	0	493
Elm	5	0	0	0	0	15	6	13	10	0	0	0	76
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	322	66	81	48	290	439	615	550	705	274	595	475	1,772
Total all species	402	87	96	119	418	449	720	856	718	537	642	475	1,844
Number of plots	91	18	19	5	7	9	12	11	5	2	1	1	1
Standard error ^{3/}	46	33	32	51	194	75	107	144	158	237	R	R	R
Average basal area	53	21	30	43	51	66	80	85	92	51	75	79	142

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.Northern Pine Unit
Aspen
Site Index 0-50

Table 142.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Aspen forest type - Site index class 51-60

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	3	2	0	0	3	0	12	3	7	0	0	0	0
Red pine	9	4	3	4	8	9	14	6	44	0	0	0	0
Jack pine	33	14	30	27	38	46	57	14	37	0	0	0	0
White spruce	5	6	3	0	3	3	4	13	15	0	0	0	0
Black spruce	3	0	0	0	22	2	0	2	0	0	0	0	0
Balsam fir	19	6	16	5	38	10	30	44	0	0	0	0	0
Tamarack	1	0	1	0	3	0	4	0	0	0	0	0	0
Northern white-cedar	1	0	0	0	5	0	0	4	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	74	31	54	37	120	69	121	86	102	0	0	0	0
Hardwoods:													
Select white oaks	25	9	6	5	28	37	46	45	24	121	0	0	0
Select red oaks	21	10	3	5	15	40	24	25	46	313	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	2	2	0	0	3	3	5	0	0	0	0	0	0
Soft maple	4	2	0	0	0	0	8	14	11	73	0	0	0
Ash	13	2	5	3	21	20	4	39	37	0	0	0	0
Balsam poplar	31	11	21	0	73	17	57	32	53	0	0	0	0
Paper birch	47	21	14	42	28	22	98	99	96	0	0	0	0
Bigtooth aspen	24	1	2	3	0	39	29	35	182	0	0	0	0
Quaking aspen	279	70	123	130	314	422	462	404	421	441	0	0	0
Basswood	9	1	3	0	6	28	12	5	9	121	0	0	0
Elm	17	4	3	4	12	38	22	27	33	132	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	472	133	179	192	500	667	767	723	913	1,201	0	0	0
Total all species	546	165	233	228	619	736	888	809	1,015	1,201	0	0	0
Number of plots	252	43	44	21	27	35	42	25	13	2	0	0	0
Standard error	28	27	26	33	53	59	70	69	126	663	0	0	0
Average basal area	63	23	47	47	77	79	81	87	92	120	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 143.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Aspen forest type - Site index class 61-70

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	7	6	0	1	0	2	19	8	32	0	0	0	0
Red pine	19	12	9	6	5	18	20	37	116	0	0	0	0
Jack pine	21	10	14	26	33	17	31	7	6	165	0	0	0
White spruce	8	5	0	0	9	2	23	9	5	0	0	0	0
Black spruce	3	0	2	2	2	2	7	5	0	0	0	0	0
Balsam fir	29	8	5	11	18	27	48	52	59	113	0	0	0
Tamarack	3	0	0	2	0	6	6	0	0	0	0	0	0
Northern white-cedar	1	0	0	0	0	4	0	2	0	43	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	92	41	30	49	67	78	154	119	219	321	0	0	0
Hardwoods:													
Select white oaks	26	16	16	15	22	39	33	19	19	18	0	0	0
Select red oaks	39	11	10	10	33	41	53	79	72	42	128	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	9	2	5	1	7	10	8	19	6	37	111	0	0
Soft maple	6	3	2	3	2	7	14	3	8	9	0	0	0
Ash	13	6	3	15	9	18	16	21	14	6	0	0	0
Balsam poplar	33	11	13	21	42	39	36	44	81	29	35	0	0
Paper birch	84	35	16	55	70	106	127	117	62	41	0	0	0
Bigtooth aspen	32	1	1	0	11	40	66	48	54	0	0	0	0
Quaking aspen	477	106	157	230	492	636	599	692	656	663	1,205	0	0
Basswood	20	10	10	1	7	20	27	40	25	47	242	0	0
Elm	15	5	9	8	23	15	15	32	17	11	0	0	0
Select hardwoods	1	1	0	0	2	1	1	0	0	8	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	754	207	242	360	721	972	995	1,115	1,015	910	1,720	0	0
Total all species	846	247	271	408	788	1,049	1,149	1,234	1,233	1,231	1,720	0	0
Number of plots	530	68	51	41	53	125	116	55	14	5	2	0	0
Standard error	24	27	27	37	55	37	44	60	122	309	682	0	0
Average basal area	76	28	49	54	75	92	93	100	99	97	126	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 144.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Aspen forest type - Site index class 71-80

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	8	2	1	1	7	12	7	11	50	69	0	0	0
Red pine	24	16	4	9	10	30	37	46	0	159	0	0	0
Jack pine	25	11	10	54	24	29	18	12	114	105	0	0	0
White spruce	8	13	0	3	9	10	5	12	0	0	0	0	0
Black spruce	1	0	5	0	2	0	2	4	0	0	0	0	0
Balsam fir	49	6	20	8	42	62	55	135	152	110	0	0	0
Tamarack	4	0	0	3	7	4	5	0	0	0	0	0	0
Northern white-cedar	4	0	0	0	6	7	0	0	0	80	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	124	48	39	79	106	154	129	220	317	523	0	0	0
Hardwoods:													
Select white oaks	22	17	7	20	20	28	24	7	34	0	0	0	0
Select red oaks	39	16	13	22	31	48	56	45	191	11	0	0	0
Other red oaks	1	0	1	0	0	0	4	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	1	0	0	0	0	0	0
Hard maple	5	2	0	5	7	5	6	9	32	0	0	0	0
Soft maple	8	4	4	7	4	10	11	6	0	6	0	0	0
Ash	18	8	3	15	21	20	21	27	0	56	0	0	0
Balsam poplar	47	30	42	25	42	65	38	74	82	0	0	0	0
Paper birch	95	23	27	48	95	109	125	199	215	69	0	0	0
Bigtooth aspen	48	2	7	2	43	56	69	92	0	382	0	0	0
Quaking aspen	591	138	192	369	580	708	791	786	717	590	0	0	0
Basswood	21	0	18	15	17	28	26	11	20	7	0	0	0
Elm	15	2	9	11	10	19	26	17	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	1	0	0	0	0	0	0
Other hardwoods	0	0	0	0	2	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	912	241	322	539	871	1,096	1,198	1,275	1,291	1,120	0	0	0
Total all species	1,035	289	362	617	978	1,250	1,327	1,496	1,607	1,643	0	0	0
Number of plots	525	41	41	35	114	159	108	17	4	6	0	0	0
Standard error	25	32	36	56	42	39	47	137	247	279	0	0	0
Average basal area	84	31	53	70	83	95	101	102	108	110	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.

^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 145.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Aspen forest type - Site index class 81-90

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	8	0	0	5	11	5	9	40	0	0	111	0	0
Red pine	19	0	0	31	27	5	20	92	0	0	0	0	0
Jack pine	22	0	8	23	37	20	10	0	45	0	0	0	0
White spruce	6	0	0	6	6	5	8	27	0	0	0	0	0
Black spruce	5	45	0	3	2	0	11	0	0	0	0	0	0
Balsam fir	60	17	15	30	69	80	65	61	0	0	0	0	0
Tamarack	4	0	0	7	0	7	6	0	0	0	0	0	0
Northern white-cedar	2	0	0	0	6	1	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	126	62	23	105	159	123	129	220	45	0	111	0	0
Hardwoods:													
Select white oaks	20	11	10	30	19	14	35	24	25	0	0	0	0
Select red oaks	27	5	5	29	31	20	48	0	0	0	0	248	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	5	0	0	0	0	0	0	0	0	0	0
Hard maple	7	0	0	7	11	1	17	8	0	0	175	0	0
Soft maple	11	10	13	6	9	14	16	0	0	0	0	0	0
Ash	23	0	0	14	34	20	22	65	0	0	0	0	0
Balsam poplar	58	40	30	37	71	50	62	159	90	0	0	0	0
Paper birch	96	53	70	42	121	115	80	27	0	0	0	971	0
Bigtooth aspen	60	0	0	10	29	107	129	7	0	0	0	0	0
Quaking aspen	792	148	242	596	836	953	893	910	1,169	0	1,551	268	0
Basswood	23	6	62	20	13	22	29	63	0	0	229	0	0
Elm	18	5	5	11	22	19	30	7	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,136	279	443	801	1,196	1,335	1,361	1,270	1,284	0	1,955	1,487	0
Total all species	1,262	341	466	906	1,355	1,458	1,490	1,489	1,329	0	2,066	1,487	0
Number of plots	287	15	13	36	84	88	38	9	2	0	1	1	0
Standard error ^{3/}	37	74	37	75	57	66	94	273	545	0	R	R	0
Average basal area	94	36	67	84	98	101	106	103	83	0	165	109	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.Northern Pine Unit
Aspen
Site Index 81-90

Table 146.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Aspen forest type - Site index class 91-100

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	12	0	0	20	2	10	16	111	0	0	0	0	0
Red pine	13	0	0	0	32	9	0	0	0	0	0	0	0
Jack pine	10	0	0	0	21	13	0	0	0	0	0	0	0
White spruce	44	0	0	0	21	76	109	305	0	0	0	0	0
Black spruce	9	0	0	39	0	0	0	0	0	0	0	0	0
Balsam fir	101	0	0	133	60	117	149	0	254	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	5	0	0	0	0	0	42	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	194	0	0	192	136	225	316	416	254	0	0	0	0
Hardwoods:													
Select white oaks	36	0	31	66	20	25	13	292	0	0	0	0	0
Select red oaks	55	0	0	26	19	142	94	35	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	17	0	0	5	11	21	28	0	198	0	0	0	0
Soft maple	13	0	0	10	14	21	0	0	67	0	0	0	0
Ash	73	0	0	19	123	36	44	87	379	0	192	0	0
Balsam poplar	79	0	0	35	92	97	131	0	0	0	113	0	0
Paper birch	117	0	101	184	131	85	70	0	0	0	0	0	0
Bigtooth aspen	36	0	0	0	27	46	16	717	0	0	0	0	0
Quaking aspen	954	0	95	777	851	1,340	1,220	531	553	0	752	0	0
Basswood	30	0	0	26	34	39	27	0	0	0	34	0	0
Elm	44	0	0	6	61	32	110	0	0	0	62	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,456	0	228	1,154	1,382	1,885	1,753	1,661	1,196	0	1,154	0	0
Total all species	1,649	0	228	1,346	1,518	2,110	2,069	2,077	1,450	0	1,154	0	0
Number of plots	47	0	1	11	16	10	6	1	1	0	1	0	0
Standard error ^{3/}	100	0	R	175	156	199	263	R	R	0	R	0	0
Average basal area	111	0	45	106	101	125	135	128	79	0	109	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 147.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Aspen forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	7	3	0	3	6	6	12	10	19	28	22	0	0
Red pine	19	9	4	12	16	18	24	44	58	64	0	0	0
Jack pine	24	11	16	29	30	24	27	12	29	97	0	0	0
White spruce	8	6	1	3	8	8	14	16	7	0	0	0	0
Black spruce	3	4	2	4	4	1	4	3	0	0	0	0	0
Balsam fir	41	7	12	24	46	51	53	66	43	106	9	0	72
Tamarack	3	0	0	3	3	5	5	0	0	6	0	0	0
Northern white-cedar	3	0	0	1	5	4	1	2	0	51	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	107	40	36	79	117	117	140	154	156	351	31	0	72
Hardwoods:													
Select white oaks	23	13	9	22	21	29	31	26	29	22	0	79	73
Select red oaks	34	10	7	18	29	41	50	55	64	60	51	124	54
Other red oaks	0	0	0	0	0	0	1	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	6	2	2	4	8	6	8	11	16	12	90	0	138
Soft maple	7	3	3	4	6	9	12	6	9	15	0	0	0
Ash	18	4	3	13	28	20	17	28	30	30	138	0	0
Balsam poplar	42	18	23	24	56	50	45	53	66	14	37	73	0
Paper birch	83	27	22	57	92	101	115	114	84	41	0	486	221
Bigtooth aspen	39	1	3	3	28	60	68	51	80	153	9	0	0
Quaking aspen	531	103	151	370	616	719	681	625	569	543	943	220	717
Basswood	19	5	13	11	14	24	25	27	23	34	149	0	493
Elm	16	4	6	8	18	20	23	25	19	21	12	0	76
Select hardwoods	0	0	0	0	0	0	0	0	0	3	0	0	0
Other hardwoods	0	0	0	0	1	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	820	189	242	533	916	1,078	1,076	1,019	988	948	1,429	981	1,772
Total all species	927	229	278	612	1,033	1,195	1,216	1,173	1,143	1,299	1,460	981	1,844
Number of plots	1,732	185	169	149	301	426	322	118	39	15	5	2	1
Standard error ^{3/}	15	16	16	38	31	27	30	50	79	185	331	506	R
Average basal area	80	27	49	168	86	94	96	97	95	99	120	94	142

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.Northern Pine Unit
Aspen
Site Index A11 Classes

Table 148.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Paper birch forest type - Site index class 0-50

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	13	0	0	0	0	0	31	19	0	0	0	0	0
Red pine	20	0	0	0	0	0	0	23	143	35	0	0	0
Jack pine	27	0	0	0	0	0	36	69	76	0	0	0	0
White spruce	16	0	0	0	0	0	28	0	42	26	0	0	0
Black spruce	11	0	0	79	0	0	16	27	0	0	0	0	0
Balsam fir	61	0	0	273	69	10	39	0	224	94	0	0	0
Tamarack	13	0	0	0	0	0	37	0	0	0	0	0	0
Northern white-cedar	26	0	0	0	111	0	0	0	0	215	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	186	0	0	352	180	10	186	137	485	370	0	0	0
Hardwoods:													
Select white oaks	9	0	0	0	0	32	0	42	0	0	0	0	0
Select red oaks	16	0	0	0	0	33	22	0	36	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	3	0	14	0	0	0	5	0	0	0	0	0	0
Soft maple	2	0	0	0	0	0	5	0	0	0	0	0	0
Ash	21	0	26	0	16	60	16	0	0	55	0	0	0
Balsam poplar	9	0	0	0	0	12	4	25	0	46	0	0	0
Paper birch	256	0	59	124	398	277	263	283	250	315	39	0	0
Bigtooth aspen	14	0	0	0	0	66	4	0	0	0	101	0	0
Quaking aspen	56	0	29	0	17	25	86	117	24	49	46	0	0
Basswood	8	0	0	0	0	22	0	8	38	0	0	0	0
Elm	19	0	0	0	0	21	6	3	18	41	258	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	413	0	129	124	431	549	411	478	366	506	444	0	0
Total all species	599	0	129	476	611	559	598	615	851	876	444	0	0
Number of plots	29	0	2	1	3	4	10	3	3	2	1	0	0
Standard error ^{3/}	62	0	18	R	357	135	96	197	119	257	R	0	0
Average basal area	75	0	55	41	78	65	72	70	89	114	105	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 149.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Paper birch forest type - Site index class 51-60

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	13	0	38	0	25	2	10	32	31	0	0	0	0
Red pine	43	0	30	0	0	38	47	13	371	0	92	0	0
Jack pine	22	0	0	31	0	55	9	27	0	0	0	0	0
White spruce	7	0	0	0	0	0	6	11	0	64	0	0	0
Black spruce	6	138	0	0	0	6	4	12	0	0	0	0	0
Balsam fir	75	0	0	19	54	61	30	128	0	316	472	65	0
Tamarack	5	0	30	0	13	0	10	0	0	0	0	0	0
Northern white-cedar	18	0	0	0	12	3	3	8	0	111	86	164	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	189	138	98	49	104	165	119	230	402	492	650	229	0
Hardwoods:													
Select white oaks	12	0	0	0	6	10	15	24	0	15	0	13	0
Select red oaks	43	0	0	0	0	74	41	63	58	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	2	0	0	0	0	0	0	11	0	0	0	0	0
Yellow birch	1	0	0	0	8	0	0	0	0	0	0	0	0
Hard maple	14	0	0	0	0	29	15	9	0	0	0	36	0
Soft maple	8	0	19	0	11	11	4	14	0	0	37	0	0
Ash	46	50	0	0	0	17	44	51	141	132	123	128	0
Balsam poplar	20	31	45	0	67	21	14	0	0	8	0	79	0
Paper birch	412	129	129	128	262	425	395	459	492	742	419	547	0
Bigtooth aspen	10	0	19	0	0	8	6	27	0	0	0	36	0
Quaking aspen	83	0	0	47	56	105	134	50	35	15	69	32	0
Basswood	30	0	0	0	0	14	31	52	0	48	149	107	0
Elm	21	0	0	0	0	24	1	34	100	46	0	54	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	702	209	212	176	409	740	701	794	827	1,005	797	1,032	0
Total all species	891	348	310	225	513	906	820	1,024	1,229	1,497	1,447	1,261	0
Number of plots	74	1	3	2	5	19	21	12	3	4	1	3	0
Standard error ^{3/}	51	R	65	164	90	106	63	100	260	223	R	113	0
Average basal area	86	75	37	47	62	90	87	94	99	110	92	96	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 150.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Paper birch forest type - Site index class 61-70

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	22	0	0	20	0	13	40	14	120	0	0	0	0
Red pine	47	0	0	0	79	17	89	65	0	0	0	0	0
Jack pine	20	0	0	0	88	6	11	27	22	0	0	0	0
White spruce	9	32	0	0	0	8	9	16	18	0	0	0	0
Black spruce	1	0	0	0	0	3	0	0	0	0	0	0	0
Balsam fir	44	0	0	0	5	36	37	76	59	342	0	0	0
Tamarack	4	0	0	0	32	0	0	0	0	0	0	0	0
Northern white-cedar	13	0	0	0	0	7	15	8	0	281	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	159	32	0	20	204	90	200	206	219	623	0	0	0
Hardwoods:													
Select white oaks	16	0	46	9	12	9	20	23	11	45	0	0	0
Select red oaks	81	0	0	109	86	70	99	105	49	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	3	0	0	0	0	1	0	0	54	0	0	0	0
Hard maple	11	0	0	0	3	16	1	26	0	0	0	0	0
Soft maple	12	0	0	0	8	19	11	10	6	0	0	0	0
Ash	22	0	0	57	28	22	2	38	0	103	0	0	0
Balsam poplar	27	0	0	48	13	51	13	16	18	0	0	0	0
Paper birch	525	36	285	315	464	514	529	659	736	618	0	0	0
Bigtooth aspen	30	0	0	0	41	39	36	14	38	0	0	0	0
Quaking aspen	126	0	76	129	106	105	161	115	203	309	0	0	0
Basswood	29	0	0	0	17	27	40	43	0	32	0	0	0
Elm	32	0	0	0	18	50	18	43	7	54	0	0	0
Select hardwoods	1	0	0	0	0	0	2	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	914	36	406	667	793	922	932	1,092	1,122	1,162	0	0	0
Total all species	1,073	69	406	688	997	1,012	1,133	1,298	1,342	1,785	0	0	0
Number of plots	98	2	2	4	11	33	23	17	4	2	0	0	0
Standard error	52	69	255	189	137	68	99	145	313	383	0	0	0
Average basal area	92	17	45	101	91	92	94	96	102	122	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 151.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Paper birch forest type - Site index class 71-80

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	19	0	0	0	0	19	11	94	0	0	0	0	0
Red pine	40	0	0	0	18	43	18	177	0	0	0	0	0
Jack pine	36	0	0	0	0	0	141	0	0	0	0	0	0
White spruce	17	0	0	0	0	19	41	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	118	0	0	0	177	32	262	29	123	0	131	0	0
Tamarack	3	0	0	82	0	0	0	0	0	0	0	0	0
Northern white-cedar	9	0	0	0	0	0	0	0	0	0	285	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	242	0	0	82	195	113	472	300	123	0	416	0	0
Hardwoods:													
Select white oaks	28	0	0	0	17	23	39	50	75	0	0	0	0
Select red oaks	56	0	0	0	62	128	0	0	0	0	0	0	0
Other red oaks	2	0	0	0	0	4	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	13	0	0	0	0	23	0	0	147	0	0	0	0
Soft maple	28	0	0	0	0	34	58	12	0	0	0	0	0
Ash	33	0	0	0	0	9	59	0	0	0	464	0	0
Balsam poplar	97	0	0	281	177	39	55	124	0	0	614	0	0
Paper birch	554	0	475	0	399	661	549	609	749	0	456	0	0
Bigtooth aspen	18	0	0	0	66	21	0	0	0	0	0	0	0
Quaking aspen	135	0	0	70	251	142	125	100	0	0	0	0	0
Basswood	24	0	0	0	0	43	13	0	155	0	0	0	0
Elm	15	0	0	0	0	2	30	42	0	0	83	0	0
Select hardwoods	2	0	0	0	0	6	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,005	0	475	351	972	1,135	927	938	1,126	0	1,617	0	0
Total all species	1,247	0	475	433	1,166	1,248	1,400	1,237	1,249	0	2,033	0	0
Number of plots	31	0	1	1	5	11	8	3	1	0	1	0	0
Standard error ^{3/}	89	0	R	R	170	95	244	259	R	0	R	0	0
Average basal area	99	0	60	41	103	109	100	76	98	0	128	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 152.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Paper birch forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	19	0	14	10	4	10	25	42	52	0	0	0	0
Red pine	43	0	11	0	32	39	51	52	140	9	31	0	0
Jack pine	23	0	0	8	32	19	31	28	29	0	0	0	0
White spruce	10	16	0	0	0	7	15	11	18	39	0	0	0
Black spruce	4	35	0	10	0	3	4	6	0	0	0	0	0
Balsam fir	67	0	0	39	78	40	64	81	94	267	201	65	0
Tamarack	5	0	11	10	14	0	9	0	0	0	0	0	0
Northern white-cedar	15	0	0	0	15	4	7	6	0	179	124	164	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	186	51	37	77	175	122	206	226	333	494	355	229	0
Hardwoods:													
Select white oaks	16	0	11	5	19	13	17	26	11	19	0	13	0
Select red oaks	56	0	0	54	42	77	54	73	44	0	0	0	0
Other red oaks	0	0	0	0	0	1	0	0	0	0	0	0	0
Hickory	1	0	0	0	0	0	0	4	0	0	0	0	0
Yellow birch	1	0	0	0	1	1	0	0	20	0	0	0	0
Hard maple	12	0	4	0	7	20	6	15	13	0	0	36	0
Soft maple	12	8	7	0	5	20	14	10	2	0	12	0	0
Ash	32	13	7	29	26	21	26	35	39	106	195	128	0
Balsam poplar	33	8	17	59	64	37	17	20	7	15	205	79	0
Paper birch	466	92	194	205	451	506	443	553	538	604	305	547	0
Bigtooth aspen	21	0	7	0	35	29	16	15	14	0	34	36	0
Quaking aspen	107	0	26	85	121	113	135	89	90	97	38	32	0
Basswood	27	0	0	0	22	27	27	38	25	32	50	107	0
Elm	25	0	0	0	15	33	12	35	35	47	114	54	0
Select hardwoods	0	0	0	0	0	1	1	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	807	120	273	437	806	898	769	915	836	920	953	1,032	0
Total all species	994	171	309	514	981	1,020	975	1,141	1,169	1,414	1,308	1,261	0
Number of plots	241	4	8	8	30	68	62	36	11	8	3	3	0
Standard error	33	72	69	118	91	57	62	85	138	184	464	113	0
Average basal area	89	34	46	73	88	93	89	91	97	114	108	96	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 153.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Balsam poplar forest type - Site index class 0-50

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	1	0	0	0	0	0	0	0	20	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	11	0	0	0	0	109	0	0	0	0	0	0	0
White spruce	3	0	0	0	8	14	0	0	0	0	0	0	0
Black spruce	1	0	0	0	5	0	0	0	0	0	0	0	0
Balsam fir	5	0	4	0	0	29	0	15	0	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	22	0	4	0	13	153	0	15	20	0	0	0	0
Hardwoods:													
Select white oaks	1	0	4	0	0	0	0	0	7	0	0	0	0
Select red oaks	1	0	0	0	0	0	0	0	23	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	16	0	7	0	4	11	0	20	181	0	0	0	0
Balsam poplar	196	189	71	91	136	369	255	391	595	0	0	0	0
Paper birch	18	0	0	8	20	0	0	0	183	0	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	82	41	69	73	77	121	228	162	0	0	0	0	0
Basswood	10	0	0	0	0	91	0	0	0	0	0	0	0
Elm	6	0	0	0	14	8	0	5	18	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	330	230	151	172	250	600	484	578	1,007	0	0	0	0
Total all species	352	230	155	172	263	753	484	593	1,027	0	0	0	0
Number of plots	48	6	10	7	12	5	2	3	3	0	0	0	0
Standard error	46	106	51	39	42	151	61	109	193	0	0	0	0
Average basal area	51	28	44	40	49	81	53	60	101	0	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.Northern Pine Unit
Balsam Poplar
Site Index 0-50

Table 154.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Balsam poplar forest type - Site index class 51-60

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	2	0	0	0	0	0	0	26	0	0	0	0	0
White spruce	5	0	0	0	0	0	24	15	0	0	0	0	0
Black spruce	4	0	0	0	0	0	30	0	0	0	0	0	0
Balsam fir	25	15	13	0	0	0	25	158	39	0	0	0	0
Tamarack	7	0	11	0	0	0	0	0	60	0	0	0	0
Northern white-cedar	3	0	0	0	0	0	18	0	10	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	47	15	23	0	0	0	98	199	109	0	0	0	0
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	35	7	0	0	0	43	59	107	115	0	0	0	0
Balsam poplar	305	114	63	375	252	462	665	366	379	0	0	0	0
Paper birch	13	0	0	17	0	7	71	16	0	0	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	72	35	29	60	169	90	140	27	44	0	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	14	30	11	0	0	7	7	14	40	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	438	186	103	452	421	610	941	530	578	0	0	0	0
Total all species	485	201	127	452	421	610	1,039	730	686	0	0	0	0
Number of plots	46	7	10	3	5	7	6	4	4	0	0	0	0
Standard error	64	80	29	177	103	107	252	253	163	0	0	0	0
Average basal area	56	32	37	77	56	65	85	65	56	0	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 155.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Balsam poplar forest type - Site index class 61-70

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	1	0	0	0	0	6	0	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	8	0	0	0	0	8	20	8	55	0	0	0	0
Black spruce	5	0	0	0	0	23	0	0	0	0	0	0	0
Balsam fir	50	0	0	0	19	93	84	82	104	0	0	0	0
Tamarack	38	0	19	0	0	48	66	120	0	0	0	0	0
Northern white-cedar	13	0	0	0	30	6	0	72	22	0	0	0	0
Other softwoods	1	0	0	0	0	7	0	0	0	0	0	0	0
Total	116	0	19	0	49	190	170	282	181	0	0	0	0
Hardwoods:													
Select white oaks	5	0	13	0	0	0	9	0	38	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	1	0	0	0	0	0	0	9	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	26	0	11	0	0	24	24	94	169	0	0	0	0
Balsam poplar	366	17	145	198	377	556	438	612	405	0	0	0	0
Paper birch	47	0	16	0	64	51	30	179	72	0	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	107	58	50	70	183	102	138	147	39	0	0	0	0
Basswood	4	0	0	0	0	0	22	0	0	0	0	0	0
Elm	22	0	14	0	34	23	22	35	101	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	578	75	249	267	658	756	683	1,076	824	0	0	0	0
Total all species	695	75	267	267	707	947	853	1,357	1,005	0	0	0	0
Number of plots	63	6	10	5	8	14	12	6	2	0	0	0	0
Standard error	61	36	83	68	49	119	94	169	206	0	0	0	0
Average basal area	64	13	38	50	68	85	67	100	87	0	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.Northern Pine Unit
Balsam Poplar
Site Index 61-70

Table 156.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Balsam poplar forest type - Site index class 71-80
(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	3	0	0	0	0	0	22	0	0	0	0	0	0
Red pine	5	0	0	0	0	0	39	0	0	0	0	0	0
Jack pine	4	0	0	0	0	0	33	0	0	0	0	0	0
White spruce	8	30	0	0	12	0	0	0	0	79	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	80	15	0	79	174	32	225	50	0	163	0	0	0
Tamarack	1	0	0	0	6	0	0	0	0	0	0	0	0
Northern white-cedar	20	0	0	0	0	0	0	0	0	858	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	120	45	0	79	192	32	319	50	0	1,100	0	0	0
Hardwoods:													
Select white oaks	14	0	5	70	0	0	40	0	0	0	0	0	0
Select red oaks	5	0	0	0	11	8	10	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	12	0	0	0	49	0	23	19	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	35	26	7	45	0	71	18	74	0	194	0	0	0
Balsam poplar	557	136	126	523	514	1,003	625	1,256	0	849	0	0	0
Paper birch	50	0	21	52	94	42	88	0	0	216	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	144	0	53	127	166	213	314	165	0	0	0	0	0
Basswood	11	0	0	12	27	0	27	30	0	0	0	0	0
Elm	47	0	60	11	9	65	52	274	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	876	162	271	840	870	1,403	1,199	1,818	0	1,259	0	0	0
Total all species	996	207	271	919	1,062	1,435	1,518	1,868	0	2,360	0	0	0
Number of plots	42	5	8	5	7	9	5	2	0	1	0	0	0
Standard error ^{3/}	108	113	82	137	105	224	234	311	0	R	0	0	0
Average basal area	74	19	39	90	81	93	95	105	0	165	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.

^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 157.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Balsam poplar forest type - Site index class 81-90

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	254	0	0	0	129	332	350	0	0	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	4	0	0	0	0	0	18	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	258	0	0	0	129	332	368	0	0	0	0	0	0
Hardwoods:													
Select white oaks	4	0	0	0	0	0	0	48	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	5	0	0	0	0	11	0	0	0	0	0	0	0
Ash	109	0	0	0	0	148	178	0	0	0	0	0	0
Balsam poplar	712	0	0	0	589	622	1,081	1,110	0	0	0	0	0
Paper birch	87	0	0	0	157	80	114	0	0	0	0	0	0
Bigtooth aspen	6	0	0	0	0	0	28	0	0	0	0	0	0
Quaking aspen	226	0	0	0	156	296	54	688	0	0	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	32	0	0	0	0	49	40	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,183	0	0	0	902	1,206	1,495	1,846	0	0	0	0	0
Total all species	1,440	0	0	0	1,031	1,538	1,863	1,846	0	0	0	0	0
Number of plots	13	1	0	0	2	6	3	1	0	0	0	0	0
Standard error ^{3/}	169	R	0	0	174	177	209	R	0	0	0	0	0
Average basal area	88	4	0	0	83	97	93	112	0	0	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.Northern Pine Unit
Balsam Poplar
Site Index 81-90

Table 158.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Northern Pine Unit, Minnesota, 1977^{1/}

Balsam poplar forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	1	0	0	0	0	2	4	0	7	0	0	0	0
Red pine	1	0	0	0	0	0	7	0	0	0	0	0	0
Jack pine	4	0	0	0	0	13	6	7	0	0	0	0	0
White spruce	6	6	0	0	5	4	14	7	12	79	0	0	0
Black spruce	3	0	0	0	2	8	7	0	0	0	0	0	0
Balsam fir	53	7	4	19	48	91	119	79	40	163	0	0	0
Tamarack	13	0	8	0	1	16	28	45	27	0	0	0	0
Northern white-cedar	9	0	0	0	7	2	6	27	10	858	0	0	0
Other softwoods	0	0	0	0	0	2	0	0	0	0	0	0	0
Total	89	13	12	19	63	139	190	164	95	1,100	0	0	0
Hardwoods:													
Select white oaks	5	0	5	17	0	0	11	3	11	0	0	0	0
Select red oaks	1	0	0	0	2	2	2	0	8	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	3	0	0	0	10	0	4	6	0	0	0	0	0
Soft maple	0	0	0	0	0	2	0	0	0	0	0	0	0
Ash	33	7	6	14	1	54	45	75	149	194	0	0	0
Balsam poplar	373	109	100	269	314	625	576	621	457	849	0	0	0
Paper birch	37	0	8	27	51	39	56	71	77	216	0	0	0
Bigtooth aspen	0	0	0	0	0	0	3	0	0	0	0	0	0
Quaking aspen	109	34	50	89	139	155	167	156	28	0	0	0	0
Basswood	6	0	0	3	6	11	14	4	0	0	0	0	0
Elm	23	9	19	6	15	32	24	52	46	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	589	158	189	425	537	920	903	987	775	1,259	0	0	0
Total all species	678	171	202	444	600	1,059	1,093	1,151	871	2,360	0	0	0
Number of plots	213	25	38	21	34	41	28	16	9	1	0	0	0
Standard error ^{3/}	40	41	32	80	64	88	106	149	110	R	0	0	0
Average basal area	63	23	40	61	63	85	78	85	78	165	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 159.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Central Hardwood Unit, Minnesota, 1977^{1/}

Black spruce forest type - Site index class 0-50

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	6	0	0	9	0	0	0	34	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	104	0	43	50	137	117	139	236	0	0	0	0	0
Balsam fir	12	0	0	13	0	0	9	63	0	0	0	0	0
Tamarack	70	0	0	64	0	18	146	40	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	191	0	43	135	137	134	294	373	0	0	0	0	0
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	3	0	0	9	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	3	0	0	9	0	0	0	0	0	0	0	0	0
Balsam poplar	0	0	0	0	0	0	0	0	0	0	0	0	0
Paper birch	19	0	0	0	0	0	67	0	0	0	0	0	0
Bigtooth aspen	3	0	0	0	0	0	0	37	0	0	0	0	0
Quaking aspen	34	0	0	82	0	0	10	33	0	0	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	62	0	0	100	0	0	77	70	0	0	0	0	0
Total all species	253	0	43	235	137	134	370	443	0	0	0	0	0
Number of plots	14	0	1	5	1	2	4	1	0	0	0	0	0
Standard error ^{3/}	51	0	R	90	R	R	107	R	0	0	0	0	0
Average basal area	62	0	19	62	71	68	56	109	0	0	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 160.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Central Hardwood Unit, Minnesota, 1977^{1/}

Black spruce forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	6	0	0	9	0	0	0	34	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	104	0	43	50	137	117	139	236	0	0	0	0	0
Balsam fir	12	0	0	13	0	0	9	63	0	0	0	0	0
Tamarack	70	0	0	64	0	18	146	40	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	191	0	43	135	137	134	294	373	0	0	0	0	0
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	3	0	0	9	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	3	0	0	9	0	0	0	0	0	0	0	0	0
Balsam poplar	0	0	0	0	0	0	0	0	0	0	0	0	0
Paper birch	19	0	0	0	0	0	67	0	0	0	0	0	0
Bigtooth aspen	3	0	0	0	0	0	0	37	0	0	0	0	0
Quaking aspen	34	0	0	82	0	0	10	33	0	0	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	62	0	0	100	0	0	77	70	0	0	0	0	0
Total all species	253	0	43	235	137	134	370	443	0	0	0	0	0
Number of plots	14	0	1	5	1	2	4	1	0	0	0	0	0
Standard error ^{3/}	51	0	R	90	R	R	107	R	0	0	0	0	0
Average basal area	62	0	19	62	71	68	56	109	0	0	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 161.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Central Hardwood Unit, Minnesota, 1977^{1/}

Tamarack forest type - Site index class 0-50

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	9	0	47	0	0	0	0	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	3	0	0	38	0	0	0	0	0	0	0	0	0
Black spruce	19	0	23	0	0	12	0	169	0	0	0	0	0
Balsam fir	0	0	0	0	0	0	0	0	0	0	0	0	0
Tamarack	443	0	162	106	0	485	744	183	258	563	0	826	981
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	475	0	233	144	0	497	744	353	258	563	0	826	981
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	4	0	0	0	0	0	0	0	0	29	0	0	0
Ash	2	0	0	0	0	7	0	0	0	0	0	0	0
Balsam poplar	6	0	0	0	0	0	0	0	0	45	0	0	0
Paper birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	7	0	0	0	0	16	0	39	0	0	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	15	0	0	0	0	25	0	0	0	22	0	86	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	34	0	0	0	0	48	0	39	0	96	0	86	0
Total all species	509	0	233	144	0	545	744	392	258	660	0	911	981
Number of plots	15	0	3	1	0	4	1	1	1	2	0	1	1
Standard error ^{3/}	73	0	93	R	0	92	R	R	R	160	0	R	R
Average basal area	58	0	45	49	0	67	68	64	19	58	0	56	94

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 162.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Central Hardwood Unit, Minnesota, 1977^{1/}Central Hardwood Unit
Tamarack
Site Index All Classes

Tamarack forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	6	0	35	0	0	0	0	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	2	0	0	19	0	0	0	0	0	0	0	0	0
Black spruce	15	0	18	0	60	10	0	85	0	0	0	0	0
Balsam fir	2	0	14	0	0	0	0	0	0	0	0	0	0
Tamarack	503	0	176	145	294	632	807	443	258	563	618	826	981
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	528	0	243	164	354	642	807	528	258	563	618	826	981
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	3	0	0	0	0	15	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	3	0	0	0	0	0	0	0	0	29	0	0	0
Ash	1	0	0	0	0	6	0	0	0	0	0	0	0
Balsam poplar	4	0	0	0	0	0	0	0	0	45	0	0	0
Paper birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	10	0	31	0	0	12	0	20	0	0	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	13	0	0	0	0	32	0	0	0	22	0	86	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	33	0	31	0	0	65	0	20	0	96	0	86	0
Total all species	562	0	274	164	354	707	807	548	258	660	618	911	981
Number of plots	23	0	4	2	1	5	3	2	1	2	1	1	1
Standard error ^{3/}	68	0	77	21	R	176	156	156	R	160	R	R	R
Average basal area	55	0	45	34	49	73	63	49	19	58	41	56	94

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 163.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Central Hardwood Unit, Minnesota 1977¹/

Oak-hickory forest type - Site index class 0-50

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	1	0	3	0	0	0	0	0	7	0	0	0	0
Red pine	5	0	11	0	0	0	0	0	3	20	0	2	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	0	0	0	0	0	6	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	0	0	0	0	0	0	0	0	0	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	4	0	0	0	26	0	3	17	2	2	2	0	0
Total	10	0	14	0	26	6	3	17	12	22	2	2	0
Hardwoods:													
Select white oaks	237	51	82	18	111	123	170	270	187	341	246	308	255
Select red oaks	283	44	124	0	335	233	300	220	392	308	272	327	361
Other red oaks	13	0	0	0	0	0	0	4	6	16	41	11	0
Hickory	11	0	0	30	0	0	21	8	4	6	21	25	9
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	6	0	5	0	0	0	0	9	5	0	7	25	0
Soft maple	1	0	0	0	0	7	0	2	2	0	4	0	0
Ash	10	0	0	0	0	4	23	6	20	12	10	2	0
Balsam poplar	0	0	0	0	0	0	0	0	0	0	3	0	0
Paper birch	23	18	9	68	30	46	38	36	20	14	20	27	0
Bigtooth aspen	4	0	6	0	0	0	4	3	10	3	5	0	0
Quaking aspen	24	13	8	0	137	0	17	36	33	17	24	19	0
Basswood	23	0	0	0	0	50	20	26	14	10	35	46	29
Elm	44	25	17	39	24	27	16	44	45	56	51	52	37
Select hardwoods	11	0	0	0	14	0	12	6	7	18	13	18	6
Other hardwoods	3	0	0	0	0	0	0	9	5	0	2	4	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	694	152	250	154	652	489	621	679	751	800	753	863	698
Total all species	704	152	264	154	678	495	624	696	763	822	755	864	698
Number of plots	179	5	9	2	3	6	11	25	27	32	34	20	5
Standard error	29	58	18	40	165	120	70	66	64	83	52	118	113
Average basal area	80	40	52	30	78	64	73	82	92	83	83	89	86

¹/Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.²/Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 164.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Central Hardwood Unit, Minnesota, 1977^{1/}

Oak-hickory forest type - Site index class 51-60

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	3	0	0	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	0	0	0	0	0	0	0	0	0	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	3	0	0	0	0	0	0	10	3	0	0	0	0
Total	3	0	0	0	0	0	3	10	3	0	0	0	0
Hardwoods:													
Select white oaks	193	0	133	0	310	121	274	204	115	252	160	249	0
Select red oaks	527	329	127	0	284	395	324	567	650	611	926	682	0
Other red oaks	13	78	0	0	0	6	7	19	40	0	6	0	0
Hickory	20	0	45	0	27	56	11	23	0	0	15	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	8	0	0	0	0	2	4	7	3	38	11	16	0
Soft maple	8	0	0	0	0	6	14	0	11	9	0	34	0
Ash	12	0	0	0	46	9	17	15	10	0	10	0	0
Balsam poplar	3	0	0	0	0	0	0	0	15	7	0	0	0
Paper birch	49	0	0	0	54	45	81	43	43	66	40	24	0
Bigtooth aspen	12	0	0	0	0	26	7	21	5	16	0	0	0
Quaking aspen	47	0	0	0	71	115	54	23	74	0	12	0	0
Basswood	29	61	0	0	10	18	41	11	33	47	41	70	0
Elm	46	0	0	0	37	37	21	61	42	58	79	56	0
Select hardwoods	12	0	0	0	0	9	6	20	6	30	17	4	0
Other hardwoods	9	0	0	0	0	4	2	13	10	41	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	987	468	305	0	838	850	862	1,025	1,058	1,176	1,317	1,137	0
Total all species	990	468	305	0	838	850	864	1,035	1,061	1,176	1,317	1,137	0
Number of plots	110	1	3	0	4	19	18	25	14	9	10	7	0
Standard error ^{3/}	41	R	44	0	258	88	85	78	116	130	145	153	0
Average basal area	89	38	59	0	91	88	83	88	94	89	106	91	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 165.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Central Hardwood Unit, Minnesota, 1977^{1/}

Oak-hickory forest type - Site index class 61-70

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	1	0	0	0	0	3	0	0	0	0	0	0	0
Red pine	3	0	0	0	0	12	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	0	0	0	0	0	0	0	0	0	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	4	0	0	0	0	15	0	0	0	0	0	0	0
Hardwoods:													
Select white oaks	175	0	0	96	42	182	197	165	143	87	593	0	0
Select red oaks	571	0	212	170	480	456	743	576	675	678	613	0	0
Other red oaks	8	0	0	0	0	0	32	0	0	0	0	0	0
Hickory	42	0	0	0	94	2	34	117	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	9	0	0	0	0	15	7	15	0	0	0	0	0
Soft maple	6	0	0	0	0	18	5	0	0	0	0	0	0
Ash	10	0	0	0	0	15	12	3	37	0	12	0	0
Balsam poplar	1	0	0	0	0	3	0	0	0	0	0	0	0
Paper birch	69	0	0	34	53	91	79	90	0	0	23	0	0
Bigtooth aspen	6	0	0	0	10	0	9	0	43	0	0	0	0
Quaking aspen	68	0	0	0	67	98	67	60	22	173	0	0	0
Basswood	58	0	0	0	27	57	37	103	99	0	72	0	0
Elm	63	0	0	0	36	31	52	100	161	0	142	0	0
Select hardwoods	15	0	0	0	33	7	7	10	70	51	0	0	0
Other hardwoods	5	0	0	0	20	4	3	7	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,106	0	212	301	862	978	1,285	1,246	1,250	989	1,455	0	0
Total all species	1,110	0	212	301	862	993	1,285	1,246	1,250	989	1,455	0	0
Number of plots	69	0	1	2	7	18	17	14	5	2	3	0	0
Standard error ^{3/}	60	0	R	95	173	115	112	105	218	278	423	0	0
Average basal area	91	0	30	55	76	89	99	96	95	94	100	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.Central Hardwood Unit
Oak-hickory
Site Index 61-70

Table 166.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Central Hardwood Unit, Minnesota, 1977^{1/}

Oak-hickory forest type - Site index class 71-80

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	12	0	0	0	0	0	44	0	0	0	0	0	0
Red pine	5	0	0	0	15	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	0	0	0	0	0	0	0	0	0	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	6	0	0	0	19	0	0	0	0	0	0	0	0
Total	22	0	0	0	34	0	44	0	0	0	0	0	0
Hardwoods:													
Select white oaks	242	0	0	0	136	245	341	298	0	309	0	0	0
Select red oaks	596	0	0	0	298	684	832	852	0	0	0	0	0
Other red oaks	60	0	0	0	83	0	56	101	0	0	0	0	0
Hickory	51	0	0	0	91	0	52	50	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	2	0	0	0	6	0	0	0	0	0	0	0	0
Soft maple	2	0	0	0	0	11	0	0	0	0	0	0	0
Ash	6	0	0	0	11	9	6	0	0	0	0	0	0
Balsam poplar	3	0	0	0	0	0	11	0	0	0	0	0	0
Paper birch	52	0	0	0	55	95	73	0	0	0	0	0	0
Bigtooth aspen	9	0	0	0	16	13	10	0	0	0	0	0	0
Quaking aspen	60	0	0	0	71	127	49	21	0	0	0	0	0
Basswood	37	0	0	0	15	62	50	45	0	0	0	0	0
Elm	130	0	0	0	76	111	133	209	0	327	0	0	0
Select hardwoods	37	0	265	0	11	41	25	50	0	44	0	0	0
Other hardwoods	4	0	105	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,290	0	370	0	869	1,397	1,638	1,626	0	679	0	0	0
Total all species	1,312	0	370	0	903	1,397	1,682	1,626	0	679	0	0	0
Number of plots	30	0	1	0	9	5	8	6	0	1	0	0	0
Standard error ^{3/}	101	0	R	0	100	269	167	136	0	R	0	0	0
Average basal area	94	0	41	0	84	101	110	98	0	52	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 167.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Central Hardwood Unit, Minnesota, 1977^{1/}

Oak-hickory forest type - All site index classes

(In cubic feet per acre)

Species	Average2/	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	2	0	2	0	0	1	6	0	4	0	0	0	0
Red pine	3	0	7	0	5	4	0	0	2	14	0	1	0
Jack pine	0	0	0	0	0	0	1	0	0	0	0	0	0
White spruce	0	0	0	0	0	1	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	0	0	0	0	0	0	0	0	0	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	3	0	0	0	10	0	1	10	2	2	2	0	0
Total	8	0	9	0	15	6	8	10	8	16	2	1	0
Hardwoods:													
Select white oaks	212	43	82	57	149	154	230	228	161	303	249	292	255
Select red oaks	446	91	122	85	402	514	558	469	501	376	433	419	361
Other red oaks	15	13	0	0	30	2	20	17	16	12	31	8	0
Hickory	22	0	10	15	63	24	25	39	2	4	18	18	9
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	7	0	3	0	2	6	4	9	4	8	8	22	0
Soft maple	4	0	0	0	0	10	6	1	5	2	3	9	0
Ash	10	0	0	0	14	10	14	8	19	8	10	2	0
Balsam poplar	1	0	0	0	0	1	2	0	5	1	2	0	0
Paper birch	41	15	6	51	47	64	71	46	25	23	25	26	0
Bigtooth aspen	9	0	4	0	9	22	7	9	12	6	3	0	0
Quaking aspen	43	11	5	0	80	105	51	35	45	20	20	14	0
Basswood	32	10	0	0	15	40	36	37	29	17	39	52	29
Elm	55	21	11	20	64	42	45	75	57	59	63	53	37
Select hardwoods	15	0	19	0	15	14	13	15	13	22	13	14	6
Other hardwoods	5	0	8	0	8	3	2	9	6	10	1	3	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	916	204	268	228	898	1,011	1,082	997	899	870	918	934	698
Total all species	924	204	277	228	913	1,017	1,090	1,007	907	885	919	935	698
Number of plots	398	6	14	4	25	53	56	70	46	45	47	27	5
Standard error	25	71	17	60	99	80	72	55	61	69	66	98	113
Average basal area	86	40	51	42	84	89	90	88	93	83	89	89	86

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 168.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Central Hardwood Unit, Minnesota, 1977^{1/}

Elm-ash-cottonwood forest type - Site index class 0-50

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	2	0	0	0	0	0	0	0	0	0	10	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	4	0	33	0	0	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	2	0	0	0	0	0	0	0	0	0	6	39	0
Tamarack	17	0	26	0	0	0	0	0	393	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	25	0	59	0	0	0	0	0	393	0	17	39	0
Hardwoods:													
Select white oaks	11	6	0	0	0	0	16	0	0	0	50	0	0
Select red oaks	2	6	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	4	5	0	0	0	0	0	0	0	0	0	71	0
Soft maple	20	73	0	0	0	0	0	0	0	0	12	0	0
Ash	171	74	53	24	223	441	390	117	198	234	209	133	0
Balsam poplar	0	0	0	0	0	0	0	0	0	0	0	0	0
Paper birch	1	0	0	0	0	0	0	0	0	0	7	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	28	38	0	0	0	0	0	0	0	0	106	0	0
Basswood	24	0	0	0	0	0	107	0	0	113	25	102	0
Elm	63	19	117	31	220	89	34	34	132	63	86	0	0
Select hardwoods	2	0	0	0	0	0	0	0	0	0	8	0	0
Other hardwoods	11	0	0	0	0	0	0	107	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	337	220	169	55	443	530	547	258	330	410	502	307	0
Total all species	362	220	229	55	443	530	547	258	723	410	519	345	0
Number of plots	28	7	3	1	1	2	2	3	1	2	5	1	0
Standard error ^{3/}	49	63	134	R	R	202	63	133	R	230	168	R	0
Average basal area	57	35	25	8	60	101	92	52	98	62	73	79	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 169.--Cubic foot volume per acre in growing stock trees by species group and stand-age class, Central Hardwood Unit, Minnesota 1977^{1/}

Elm-ash-cottonwood forest type - Site index class 51-60

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	3	0	0	0	0	0	9	9	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	2	0	0	0	0	0	0	0	9	0	0	0	0
Balsam fir	8	0	0	0	0	21	24	0	0	0	0	0	0
Tamarack	6	0	0	0	0	0	0	0	30	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	19	0	0	0	0	21	33	9	38	0	0	0	0
Hardwoods:													
Select white oaks	26	0	0	0	0	0	0	0	66	0	212	0	0
Select red oaks	1	0	0	0	47	0	0	0	0	0	0	0	0
Other red oaks	6	0	0	0	0	0	0	0	33	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	2	0	0	0	0	0	0	0	0	0	0	0	64
Hard maple	3	0	0	0	0	10	8	0	0	0	0	0	0
Soft maple	48	0	16	0	0	16	34	0	8	0	562	0	0
Ash	296	0	139	35	226	473	319	328	216	498	55	0	1,075
Balsam poplar	0	0	0	0	0	0	0	0	0	0	0	0	0
Paper birch	7	0	0	62	0	0	0	0	8	58	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	12	0	0	0	0	29	38	0	0	0	0	0	0
Basswood	10	0	20	31	47	0	0	0	27	0	0	0	0
Elm	139	0	158	113	59	113	99	81	167	283	377	0	98
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	37	0	0	157	0	39	0	137	5	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	587	0	332	398	379	679	498	546	529	840	1,206	0	1,237
Total all species	605	0	332	398	379	701	531	555	568	840	1,206	0	1,237
Number of plots	32	0	3	2	1	4	7	5	6	1	2	0	1
Standard error ^{3/}	65	0	94	142	R	139	100	137	118	R	714	0	R
Average basal area	71	0	47	43	75	90	64	68	68	94	88	0	146

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 170.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Central Hardwood Unit, Minnesota, 1977^{1/}

Elm-ash-cottonwood forest type - Site index class 61-70

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	6	0	83	0	0	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	0	0	0	0	0	0	0	0	0	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	6	0	83	0	0	0	0	0	0	0	0	0	0
Hardwoods:													
Select white oaks	5	67	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	15	0	0	0	0	72	0	13	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	6	0	0	0	0	0	0	20	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	288	0	0	0	0	151	119	375	911	0	0	0	0
Ash	158	0	204	0	234	270	0	195	149	0	0	0	0
Balsam poplar	0	0	0	0	0	0	0	0	0	0	0	0	0
Paper birch	40	0	0	0	0	70	0	95	0	0	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Basswood	11	0	0	0	0	74	0	0	0	0	0	0	0
Elm	124	125	0	0	179	182	0	15	439	0	0	0	0
Select hardwoods	11	54	0	40	0	0	0	13	0	0	0	0	0
Other hardwoods	159	110	0	314	0	365	380	78	113	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	818	356	204	354	413	1,183	499	804	1,613	0	0	0	0
Total all species	824	356	287	354	413	1,183	499	804	1,613	0	0	0	0
Number of plots	13	1	1	1	1	2	1	4	2	0	0	0	0
Standard error ^{3/}	151	R	R	R	R	305	R	255	225	0	0	0	0
Average basal area	76	60	45	30	68	98	82	71	113	0	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 171.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Central Hardwood Unit, Minnesota, 1977^{1/}

Elm-ash-cottonwood forest type - Site index class 71-80

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	0	0	0	0	0	0	0	0	0	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Hardwoods:													
Select white oaks	12	0	0	0	0	0	49	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	10	0	0	0	0	0	0	0	123	0	0	0	0
Soft maple	395	0	0	0	0	729	145	822	561	0	0	0	0
Ash	233	0	21	0	0	334	303	102	406	0	0	0	0
Balsam poplar	0	0	0	0	0	0	0	0	0	0	0	0	0
Paper birch	7	0	0	0	0	0	26	0	0	0	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	10	0	57	0	0	0	0	0	0	0	0	0	0
Basswood	23	0	0	0	0	0	92	0	0	0	0	0	0
Elm	207	0	62	91	0	94	305	487	494	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	354	0	20	436	0	452	555	199	95	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,250	0	160	527	0	1,609	1,475	1,610	1,679	0	0	0	0
Total all species	1,250	0	160	527	0	1,609	1,475	1,610	1,679	0	0	0	0
Number of plots	12	0	2	1	0	4	3	1	1	0	0	0	0
Standard error ^{3/}	274	0	4	R	0	624	474	R	R	0	0	0	0
Average basal area	101	0	36	86	0	117	113	109	135	0	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.Central Hardwood Unit
Elm-ash-cottonwood
Site Index 71-80

Table 172.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Central Hardwood Unit, Minnesota, 1977^{1/}

Elm-ash-cottonwood forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	2	0	0	0	0	0	4	3	0	0	7	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	2	0	20	0	0	0	0	0	0	0	0	0	0
Black spruce	1	0	0	0	0	0	0	0	5	0	0	0	0
Balsam fir	4	0	0	0	0	7	11	0	0	0	4	39	0
Tamarack	7	0	9	0	0	0	0	0	57	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	15	0	29	0	0	7	15	3	62	0	12	39	0
Hardwoods:													
Select white oaks	15	13	0	0	0	0	11	0	39	0	96	0	0
Select red oaks	3	5	0	0	16	12	0	4	0	0	0	0	0
Other red oaks	2	0	0	0	0	0	0	0	20	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	2	0	0	0	0	0	0	6	0	0	0	0	64
Hard maple	6	5	0	0	0	3	14	0	12	0	0	71	0
Soft maple	133	64	5	0	0	274	50	254	243	0	169	0	0
Ash	215	65	91	19	228	387	245	211	220	322	165	133	1,075
Balsam poplar	0	0	0	0	0	0	0	0	0	0	0	0	0
Paper birch	10	0	0	25	0	12	5	27	5	19	5	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	15	33	13	0	0	10	17	0	0	0	76	0	0
Basswood	16	0	7	12	16	12	31	0	16	75	18	102	0
Elm	130	32	105	69	153	114	110	159	250	137	169	0	98
Select hardwoods	2	7	0	8	0	0	0	4	0	0	6	0	0
Other hardwoods	121	14	4	213	0	224	310	108	35	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	669	237	225	346	412	1,048	792	773	841	553	703	307	1,237
Total all species	684	237	254	346	412	1,055	807	776	904	553	715	345	1,237
Number of plots	89	8	9	5	3	12	16	14	10	3	7	1	1
Standard error ^{3/}	63	57	53	90	19	238	136	181	177	195	232	R	R
Average basal area	72	38	37	42	68	102	80	73	87	73	78	79	146

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 173.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Central Hardwood Unit, Minnesota, 1977^{1/}

Maple-basswood forest type - Site index class 0-50

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	1	0	0	0	0	0	0	0	0	0	0	11	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	4	0	0	0	0	0	0	0	0	0	0	35	0
Tamarack	3	0	67	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	9	0	67	0	0	0	0	0	0	0	0	45	0
Hardwoods:													
Select white oaks	35	32	9	0	30	9	101	49	8	51	0	19	0
Select red oaks	35	0	0	8	0	0	104	37	0	53	65	30	0
Other red oaks	1	0	0	0	0	0	0	0	11	0	0	0	0
Hickory	5	17	0	0	0	0	12	0	13	0	0	11	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	75	0	0	30	0	0	13	66	18	50	196	300	0
Soft maple	13	0	0	0	0	20	4	25	0	16	25	16	73
Ash	54	6	0	27	45	0	84	101	126	65	17	55	0
Balsam poplar	5	0	0	0	0	10	0	15	0	8	11	0	0
Paper birch	17	0	0	0	69	8	0	34	0	12	42	14	82
Bigtooth aspen	4	0	0	0	0	0	0	19	0	0	22	0	0
Quaking aspen	27	0	0	30	9	66	42	6	8	14	7	5	752
Basswood	102	5	0	0	0	40	124	173	23	152	51	176	687
Elm	162	75	61	262	166	101	143	127	139	229	173	220	69
Select hardwoods	7	8	0	0	0	10	10	12	0	0	26	3	0
Other hardwoods	17	13	0	14	0	57	0	67	25	8	0	5	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	558	155	70	372	319	321	638	729	371	656	636	855	1,662
Total all species	567	155	137	372	319	321	638	729	371	656	636	900	1,662
Number of plots	71	6	3	3	4	5	8	8	5	13	6	9	1
Standard error ^{3/}	48	57	52	181	117	38	155	156	124	82	132	129	R
Average basal area	69	25	46	53	52	68	77	79	53	82	71	83	139

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.Central Hardwood Unit
Maple-basswood
Site Index 0-50

Table 174.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Central Hardwood Unit, Minnesota 1977^{1/}Central Hardwood Unit
Maple-basswood
Site Index 51-60

Maple-basswood forest type - Site index class 51-60

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	3	0	0	0	0	0	0	17	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	0	0	0	0	0	0	0	2	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	2	0	0	0	0
Balsam fir	0	0	0	0	0	0	0	0	2	0	0	0	0
Tamarack	8	0	0	73	26	0	5	0	19	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	3	0	0	0	0	0	0	0	0	10	42	0	0
Total	15	0	0	73	26	0	5	19	23	10	42	0	0
Hardwoods:													
Select white oaks	61	53	0	0	50	45	27	95	87	22	73	116	0
Select red oaks	59	86	45	69	46	71	34	45	70	85	61	59	0
Other red oaks	1	0	0	0	0	6	3	0	0	0	0	0	0
Hickory	3	0	0	0	0	15	0	6	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	77	36	0	0	7	27	97	102	104	108	70	102	644
Soft maple	20	0	30	0	0	24	37	11	40	11	26	0	0
Ash	56	16	48	13	35	18	25	88	82	98	28	83	0
Balsam poplar	5	0	0	0	7	12	0	3	8	10	0	0	0
Paper birch	28	11	11	19	51	48	34	26	26	24	0	12	0
Bigtooth aspen	4	0	0	0	0	6	0	0	12	0	12	0	0
Quaking aspen	34	6	25	169	22	62	27	12	59	0	22	0	0
Basswood	191	46	0	0	33	152	170	267	210	265	296	419	381
Elm	206	111	50	40	149	166	236	125	296	304	176	531	140
Select hardwoods	6	0	0	0	0	5	17	17	2	0	0	0	0
Other hardwoods	6	0	0	0	0	4	13	3	18	0	0	8	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	759	365	210	310	400	660	721	800	1,013	927	765	1,330	1,165
Total all species	774	365	210	383	426	660	726	819	1,036	937	807	1,330	1,165
Number of plots	115	6	4	3	9	17	12	22	22	9	5	5	1
Standard error ^{3/}	41	67	72	117	53	76	141	84	81	187	116	231	R
Average basal area	78	51	40	58	57	72	77	84	95	86	79	97	94

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 175.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Central Hardwood Unit, Minnesota, 1977^{1/}

Maple-basswood forest type - Site index class 61-70

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	4	0	11	0	0	0	0	0	0	0	67	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	3	0	0	0	0	0	0	11	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	1	0	0	0	0	0	0	3	0	0	0	0	0
Tamarack	3	0	0	39	0	3	0	0	0	16	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	4	0	0	0	0	0	0	16	0	0	0	0	0
Total	13	0	11	39	0	3	0	30	0	16	67	0	0
Hardwoods:													
Select white oaks	83	0	26	31	42	50	36	101	105	236	124	111	0
Select red oaks	90	0	27	24	80	100	182	66	55	84	0	230	0
Other red oaks	1	0	0	0	0	0	0	0	0	10	0	0	0
Hickory	3	0	15	0	0	0	0	0	0	32	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	107	0	0	0	200	62	128	78	170	75	23	328	0
Soft maple	24	0	22	0	33	44	30	34	4	0	13	37	0
Ash	87	0	11	62	130	79	117	113	71	0	49	143	0
Balsam poplar	0	0	0	0	0	0	0	0	0	0	0	0	0
Paper birch	43	0	10	0	59	12	95	19	64	0	0	137	0
Bigtooth aspen	7	0	0	0	0	18	12	2	10	14	0	0	0
Quaking aspen	34	499	76	0	142	49	31	15	0	0	0	21	0
Basswood	242	0	99	0	104	212	257	150	492	331	321	240	0
Elm	266	0	7	19	72	261	176	326	415	499	259	300	0
Select hardwoods	12	0	0	13	7	5	6	26	13	0	25	0	0
Other hardwoods	29	0	0	28	6	27	26	34	45	0	99	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,028	499	292	176	876	918	1,095	964	1,444	1,281	912	1,545	0
Total all species	1,041	499	303	215	876	921	1,095	994	1,444	1,297	979	1,545	0
Number of plots	96	1	5	3	6	12	17	22	15	6	5	4	0
Standard error ^{3/}	56	R	40	78	117	102	98	87	180	286	133	321	0
Average basal area	87	64	46	39	85	86	95	84	104	83	84	110	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.Central Hardwood Unit
Maple-basswood
Site Index 61-70

Table 176.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Central Hardwood Unit, Minnesota, 1977^{1/}

Maple-basswood forest type - Site index class 71-80

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	25	0	0	0	0	0	0	107	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	0	0	0	0	0	0	0	0	0	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	25	0	0	0	0	0	0	107	0	0	0	0	0
Hardwoods:													
Select white oaks	68	0	0	87	91	60	127	31	92	0	0	0	0
Select red oaks	90	0	0	135	85	26	54	98	141	224	120	0	0
Other red oaks	8	0	0	0	0	58	0	0	0	0	0	0	0
Hickory	9	0	0	0	15	13	10	0	22	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	164	0	56	118	55	104	134	145	398	447	167	0	0
Soft maple	6	0	0	0	0	0	17	13	0	0	0	0	0
Ash	58	0	0	29	124	88	24	45	68	0	0	0	0
Balsam poplar	0	0	0	0	0	0	0	0	0	0	0	0	0
Paper birch	42	0	0	271	59	35	27	31	0	0	0	0	0
Bigtooth aspen	4	0	0	30	0	0	0	10	0	0	0	0	0
Quaking aspen	65	0	0	107	140	63	63	65	0	0	0	0	0
Basswood	293	0	0	204	265	207	167	351	668	249	253	0	0
Elm	325	0	162	234	183	270	341	369	464	675	99	0	0
Select hardwoods	10	0	0	24	9	28	12	6	0	0	0	0	0
Other hardwoods	39	0	0	0	0	13	107	17	81	101	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,182	0	218	1,240	1,025	965	1,083	1,180	1,933	1,695	639	0	0
Total all species	1,207	0	218	1,240	1,025	965	1,083	1,288	1,933	1,695	639	0	0
Number of plots	35	0	1	2	6	5	6	8	4	2	1	0	0
Standard error ^{3/}	103	0	R	306	223	232	153	231	368	3	R	0	0
Average basal area	89	0	23	87	76	92	94	88	128	90	64	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 177.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Central Hardwood Unit, Minnesota, 1977^{1/}

Maple-basswood forest type - Site index class 81-90

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	0	0	0	0	0	0	0	0	0	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Hardwoods:													
Select white oaks	75	0	0	0	0	41	152	20	0	0	0	0	0
Select red oaks	131	0	0	0	0	239	220	0	0	0	0	0	0
Other red oaks	39	0	0	0	0	236	0	0	0	0	0	0	0
Hickory	38	0	0	0	0	115	0	76	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	54	0	0	0	68	209	32	0	0	0	0	0	0
Soft maple	100	0	0	0	189	56	141	62	0	0	0	0	0
Ash	120	0	0	0	384	0	25	291	0	59	0	0	0
Balsam poplar	0	0	0	0	0	0	0	0	0	0	0	0	0
Paper birch	27	0	0	0	0	164	0	0	0	0	0	0	0
Bigtooth aspen	53	0	0	0	100	144	49	0	0	0	0	0	0
Quaking aspen	63	0	0	0	0	252	50	0	0	0	0	0	0
Basswood	350	0	0	0	697	1,124	195	92	0	0	0	0	0
Elm	571	0	0	0	386	0	878	504	0	564	0	0	0
Select hardwoods	18	0	0	0	0	0	43	0	0	0	0	0	0
Other hardwoods	61	0	0	0	0	0	125	0	0	102	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,699	0	0	0	1,823	2,580	1,910	1,045	0	724	0	0	0
Total all species	1,699	0	0	0	1,823	2,580	1,910	1,045	0	724	0	0	0
Number of plots	12	0	0	0	1	2	5	3	0	1	0	0	0
Standard error ^{3/}	233	0	0	0	R	680	193	498	0	R	0	0	0
Average basal area	106	0	0	0	128	148	117	72	0	49	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.Central Hardwood Unit
Maple-basswood
Site Index 81-90

Table 178.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Central Hardwood Unit, Minnesota, 1977^{1/}

Maple-basswood forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	5	0	4	0	0	0	0	20	0	0	20	5	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	1	0	0	0	0	0	0	5	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	1	0	0	0	0
Balsam fir	1	0	0	0	0	0	0	1	1	0	0	17	0
Tamarack	4	0	15	31	9	1	1	0	9	3	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	2	0	0	0	0	0	0	6	0	3	12	0	0
Total	14	0	20	31	9	1	1	31	11	6	32	23	0
Hardwoods:													
Select white oaks	63	40	12	24	50	44	68	80	85	73	58	66	0
Select red oaks	69	39	24	52	52	74	120	56	63	78	48	82	0
Other red oaks	3	0	0	0	0	21	1	0	1	2	0	0	0
Hickory	5	8	6	0	3	13	3	6	3	6	0	5	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	95	17	4	30	83	52	92	90	142	96	106	251	322
Soft maple	21	0	18	0	14	28	37	23	20	10	20	16	36
Ash	68	10	19	33	102	41	67	103	82	58	29	82	0
Balsam poplar	3	0	0	0	2	6	0	3	4	6	4	0	0
Paper birch	32	5	7	54	63	37	45	24	34	12	15	41	41
Bigtooth aspen	7	0	0	5	4	15	9	5	9	3	11	0	0
Quaking aspen	37	41	37	74	72	68	38	18	29	6	9	7	376
Basswood	203	24	38	37	122	210	196	216	321	220	214	257	534
Elm	240	86	45	130	149	191	279	245	332	343	195	324	105
Select hardwoods	9	4	0	8	3	8	14	17	5	0	17	2	0
Other hardwoods	21	6	0	11	1	18	39	24	33	13	29	5	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	875	278	210	460	721	825	1,009	909	1,164	925	755	1,140	1,414
Total all species	889	278	229	490	729	826	1,010	939	1,175	931	787	1,163	1,414
Number of plots	330	13	13	11	27	41	48	63	46	31	17	18	2
Standard error	31	52	33	133	93	89	80	61	95	98	74	126	249
Average basal area	81	40	42	56	71	82	90	83	96	83	77	93	117

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.

^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 179.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Central Hardwood Unit Minnesota, 1977^{1/}

Aspen forest type - Site index class 0-50

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	0	0	0	0	0	0	0	0	0	0	0	0	0
Tamarack	17	0	0	0	0	0	53	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	17	0	0	0	0	0	53	0	0	0	0	0	0
Hardwoods:													
Select white oaks	24	0	24	0	27	0	39	0	0	0	0	0	0
Select red oaks	30	0	0	0	0	294	6	0	0	42	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	5	0	18	0	0	0	0	0	0	0	0	0	0
Soft maple	7	0	0	0	0	77	0	0	0	0	0	0	0
Ash	31	0	0	0	13	0	91	0	0	0	0	0	0
Balsam poplar	0	0	0	0	0	0	0	0	0	0	0	0	0
Paper birch	47	0	37	24	45	95	56	0	0	0	0	0	0
Bigtooth aspen	2	0	0	0	0	0	7	0	0	0	0	0	0
Quaking aspen	161	0	21	54	176	328	267	0	0	72	0	0	0
Basswood	11	0	0	0	0	91	10	0	0	0	0	0	0
Elm	56	0	16	0	9	141	111	0	0	43	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	375	0	117	78	270	1,025	587	0	0	158	0	0	0
Total all species	392	0	117	78	270	1,025	640	0	0	158	0	0	0
Number of plots	22	0	6	2	4	2	7	0	0	1	0	0	0
Standard error ^{3/}	87	0	71	78	92	234	163	0	0	R	0	0	0
Average basal area	53	0	27	34	62	113	62	0	0	26	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.Central Hardwood Unit
Aspen
Site Index 0-50

Table 180.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Central Hardwood Unit, Minnesota, 1977^{1/}

Aspen forest type - Site index class 51-60

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	1	0	10	0	0	0	0	0	0	0	0	0	0
Red pine	2	0	0	0	0	0	8	0	0	0	0	0	0
Jack pine	5	0	50	0	0	4	0	0	0	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	4	0	0	27	0	0	7	13	0	0	0	0	0
Balsam fir	3	3	0	0	0	0	9	5	0	0	0	0	0
Tamarack	1	0	0	0	0	0	3	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	15	3	60	27	0	4	27	18	0	0	0	0	0
Hardwoods:													
Select white oaks	24	7	0	25	27	42	34	20	0	0	0	0	0
Select red oaks	48	31	9	0	59	72	64	50	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	4	0	0	0	0	4	8	11	0	0	0	0	0
Soft maple	17	0	0	0	16	20	6	80	0	29	0	0	0
Ash	10	0	0	0	5	13	29	6	0	0	0	0	0
Balsam poplar	13	13	0	0	46	7	23	10	0	0	0	0	0
Paper birch	42	13	22	40	31	45	49	93	0	74	0	0	0
Bigtooth aspen	30	9	50	0	12	25	80	0	0	114	0	0	0
Quaking aspen	274	68	88	236	345	405	324	416	0	67	0	0	0
Basswood	17	0	22	11	0	33	30	0	0	0	0	0	0
Elm	26	5	0	42	0	19	65	42	0	0	0	0	0
Select hardwoods	2	0	0	0	0	1	3	9	0	0	0	0	0
Other hardwoods	0	0	0	0	0	2	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	508	146	191	354	541	688	716	738	0	285	0	0	0
Total all species	524	149	251	382	541	691	744	755	0	285	0	0	0
Number of plots	93	20	8	5	6	24	18	11	0	1	0	0	0
Standard error ^{3/}	37	32	41	70	113	51	84	124	0	R	0	0	0
Average basal area	62	30	44	71	54	72	78	91	0	34	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.

^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 181.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Central Hardwood Unit, Minnesota, 1977^{1/}

Aspen forest type - Site index class 61-70

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	1	0	0	0	0	1	3	0	0	0	0	0	0
Red pine	8	0	0	11	5	14	5	0	35	0	0	0	0
Jack pine	4	0	0	45	2	4	2	0	0	0	0	0	0
White spruce	2	10	0	0	0	2	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	6	0	0	0	0	20	0	0	0	0	0	0	0
Tamarack	1	0	0	0	0	4	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	22	10	0	56	7	45	10	0	35	0	0	0	0
Hardwoods:													
Select white oaks	24	2	47	8	21	21	34	26	79	129	0	0	0
Select red oaks	58	41	34	0	66	52	54	77	153	576	0	0	0
Other red oaks	2	0	0	0	7	0	4	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	6	4	0	0	12	1	5	8	62	0	0	0	0
Soft maple	12	15	9	0	6	19	9	11	17	0	0	0	0
Ash	12	0	20	4	9	12	6	63	52	0	0	0	0
Balsam poplar	9	0	0	6	19	8	11	0	14	0	0	0	0
Paper birch	68	14	16	31	71	95	70	87	128	0	0	0	0
Bigtooth aspen	47	7	0	0	21	114	36	0	36	0	0	0	0
Quaking aspen	374	92	166	308	358	427	584	467	302	261	0	0	0
Basswood	24	29	40	0	25	11	34	0	118	0	0	0	0
Elm	20	0	0	23	10	12	38	69	117	0	0	0	0
Select hardwoods	2	0	0	0	1	2	4	0	0	0	0	0	0
Other hardwoods	2	0	0	0	6	4	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	662	203	332	380	630	778	890	806	1,076	966	0	0	0
Total all species	684	213	332	436	638	823	900	806	1,111	966	0	0	0
Number of plots	162	19	9	8	38	49	27	6	5	1	0	0	0
Standard error ^{3/}	29	54	83	86	45	43	55	136	240	R	0	0	0
Average basal area	68	31	53	55	66	79	84	61	90	64	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.

^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Central Hardwood Unit
Aspen
Site Index 61-70

Table 182.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Central Hardwood Unit, Minnesota 1977^{1/}Central Hardwood Unit
Aspen
Site Index 71-80

Aspen forest type - Site index class 71-80

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	8	0	0	0	8	0	92	0	228	0	0	0	0
Red pine	8	22	0	28	3	0	0	0	0	0	0	0	0
Jack pine	4	0	22	0	6	0	0	0	0	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	2	0	0	0	0	10	0	0	0	0	0	0	0
Tamarack	4	0	23	15	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	3	0	0	0	0	0	0	0	0	0	0
Total	27	22	48	43	17	10	92	0	228	0	0	0	0
Hardwoods:													
Select white oaks	35	32	10	19	40	44	42	80	0	0	0	0	0
Select red oaks	76	9	19	60	92	73	245	403	361	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	6	0	0	0	3	13	14	69	63	0	0	0	0
Soft maple	16	7	0	12	16	25	12	0	102	0	0	0	0
Ash	13	16	0	18	16	3	56	0	0	0	0	0	0
Balsam poplar	12	21	24	7	13	6	0	0	0	0	0	0	0
Paper birch	87	17	37	120	68	133	83	431	187	0	0	0	0
Bigtooth aspen	36	0	0	0	51	54	140	0	0	0	0	0	0
Quaking aspen	439	112	87	412	602	551	243	296	1,652	0	0	0	0
Basswood	21	26	6	11	21	19	102	0	0	0	0	0	0
Elm	21	27	0	22	18	30	31	0	0	0	0	0	0
Select hardwoods	4	0	0	11	1	7	0	0	0	0	0	0	0
Other hardwoods	6	0	46	4	3	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	770	267	230	697	945	957	968	1,278	2,365	0	0	0	0
Total all species	797	289	278	739	962	967	1,060	1,278	2,593	0	0	0	0
Number of plots	101	15	9	13	32	26	4	1	1	0	0	0	0
Standard error ^{3/}	45	30	80	82	61	72	183	R	R	0	0	0	0
Average basal area	69	30	46	76	78	79	86	105	128	0	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 183.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Central Hardwood Unit, Minnesota, 1977^{1/}

Aspen forest type - Site index class 81-90

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	12	0	0	0	33	0	0	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	0	0	0	0	0	0	0	0	0	0	0	0	0
Tamarack	14	0	0	0	36	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	26	0	0	0	68	0	0	0	0	0	0	0	0
Hardwoods:													
Select white oaks	25	0	86	17	22	18	32	0	0	0	0	0	0
Select red oaks	137	0	0	30	138	368	117	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	9	0	0	0	16	13	0	0	0	0	0	0	0
Soft maple	34	0	109	0	10	40	130	0	0	0	0	0	0
Ash	13	0	37	0	7	35	0	0	0	0	0	0	0
Balsam poplar	5	0	0	0	0	0	52	0	0	0	0	0	0
Paper birch	120	108	44	201	157	67	87	0	0	0	0	0	0
Bigtooth aspen	67	36	0	0	70	184	0	0	0	0	0	0	0
Quaking aspen	472	169	392	141	583	644	545	0	0	0	0	0	0
Basswood	32	0	0	0	42	63	39	0	0	0	0	0	0
Elm	14	0	45	0	26	0	0	0	0	0	0	0	0
Select hardwoods	5	0	0	0	6	0	30	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	931	312	714	388	1,077	1,433	1,032	0	0	0	0	0	0
Total all species	957	312	714	388	1,145	1,433	1,032	0	0	0	0	0	0
Number of plots	21	3	2	2	8	4	2	0	0	0	0	0	0
Standard error	103	183	249	107	101	103	306	0	0	0	0	0	0
Average basal area	74	30	79	42	81	99	94	0	0	0	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 184.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Central Hardwood Unit, Minnesota, 1977^{1/}

Aspen forest type - All site index classes
(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	3	0	2	0	6	0	8	0	38	0	0	0	0
Red pine	5	6	0	15	3	6	5	0	29	0	0	0	0
Jack pine	4	0	18	12	3	3	1	0	0	0	0	0	0
White spruce	1	3	0	0	0	1	0	0	0	0	0	0	0
Black spruce	1	0	0	5	0	0	2	8	0	0	0	0	0
Balsam fir	4	1	0	0	0	12	3	3	0	0	0	0	0
Tamarack	3	0	6	7	3	2	7	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	1	0	0	0	0	0	0	0	0	0	0
Total	22	10	27	38	16	24	26	11	67	0	0	0	0
Hardwoods:													
Select white oaks	27	12	24	16	29	31	35	25	66	43	0	0	0
Select red oaks	63	27	16	28	78	78	66	78	187	206	0	0	0
Other red oaks	1	0	0	0	3	0	2	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	6	1	3	0	8	5	6	13	62	0	0	0	0
Soft maple	15	7	9	5	11	23	12	53	31	10	0	0	0
Ash	13	4	7	9	11	11	27	25	43	0	0	0	0
Balsam poplar	10	10	6	5	16	7	14	6	11	0	0	0	0
Paper birch	68	20	29	82	74	92	64	109	138	25	0	0	0
Bigtooth aspen	39	7	12	0	35	79	52	0	30	38	0	0	0
Quaking aspen	360	93	114	313	458	459	440	426	527	134	0	0	0
Basswood	21	17	17	7	22	21	35	0	98	0	0	0	0
Elm	23	9	6	23	13	20	54	49	98	14	0	0	0
Select hardwoods	2	0	0	5	2	3	4	5	0	0	0	0	0
Other hardwoods	3	0	12	2	4	2	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	652	206	256	493	763	831	810	791	1,291	470	0	0	0
Total all species	673	216	283	531	778	856	836	801	1,358	470	0	0	0
Number of plots	399	57	34	30	88	105	58	18	6	3	0	0	0
Standard error	21	25	41	57	39	33	45	90	315	251	0	0	0
Average basal area	67	30	46	65	71	79	80	82	96	41	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.

^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 185.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Central Hardwood Unit, Minnesota, 1977^{1/}

Paper birch forest type						Site index class 0-50							
(In cubic feet per acre)													
Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	16	0	0	0	0	0	0	0	104	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	5	0	0	0	0	0	0	0	34	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	3	0	0	0	11	0	0	0	0	0	0	0	0
Tamarack	10	0	24	0	20	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	10	0	0	0	0	0	125	0	0	0	0	0	0
Total	43	0	24	0	31	0	125	0	138	0	0	0	0
Hardwoods:													
Select white oaks	44	0	0	33	13	0	0	0	125	256	0	0	0
Select red oaks	42	101	30	0	15	0	0	0	25	155	0	108	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	7	0	0	0	0	0	94	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	2	0	0	0	7	0	0	0	0	0	0	0	0
Balsam poplar	4	0	0	46	0	0	0	0	0	0	0	0	0
Paper birch	90	108	16	124	119	0	287	0	30	96	0	86	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	21	0	0	0	0	0	0	0	134	0	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	20	0	43	60	25	0	0	0	0	0	0	0	0
Select hardwoods	4	0	0	0	17	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	234	209	89	263	197	0	382	0	314	506	0	194	0
Total all species	277	209	112	263	228	0	507	0	452	506	0	194	0
Number of plots	13	1	3	1	3	0	1	0	2	1	0	1	0
Standard error ^{3/}	58	R	54	R	103	0	R	0	304	R	0	R	0
Average basal area	40	19	33	41	36	0	71	0	53	60	0	23	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.

^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 186.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Central Hardwood Unit, Minnesota, 1977^{1/}

Paper birch forest type - Site index class 51-60

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	9	0	0	0	0	0	52	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	3	0	0	0	0	0	17	0	0	0	0	0	0
Black spruce	2	0	0	0	0	7	0	0	0	0	0	0	0
Balsam fir	11	0	0	0	0	8	53	0	0	0	0	0	0
Tamarack	6	0	0	0	0	22	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	30	0	0	0	0	37	122	0	0	0	0	0	0
Hardwoods:													
Select white oaks	33	0	0	23	0	10	0	29	0	414	0	0	0
Select red oaks	79	0	0	16	104	0	158	350	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	19	0	0	0	0	0	0	170	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	15	0	36	0	0	38	0	0	0	0	0	0	0
Ash	12	0	0	0	0	24	31	0	0	0	0	0	0
Balsam poplar	9	0	0	16	0	21	0	0	0	0	0	0	0
Paper birch	383	0	116	132	745	389	368	723	0	290	0	0	0
Bigtooth aspen	17	0	0	86	0	0	19	0	0	0	0	0	0
Quaking aspen	63	0	0	73	49	68	0	236	0	0	0	0	0
Basswood	13	0	0	0	24	0	0	0	0	193	0	0	0
Elm	41	0	0	36	25	71	30	72	0	0	0	0	0
Select hardwoods	4	0	0	0	33	0	0	0	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	688	0	152	381	979	620	605	1,580	0	898	0	0	0
Total all species	718	0	152	381	979	657	727	1,580	0	898	0	0	0
Number of plots	18	0	2	3	2	5	3	2	0	1	0	0	0
Standard error ^{3/}	109	0	152	66	193	100	203	422	0	R	0	0	0
Average basal area	75	0	44	65	96	65	88	96	0	94	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 187.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Central Hardwood Unit, Minnesota, 1977^{1/}

Paper birch forest type - Site index class 61-70

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	19	0	0	0	36	0	0	0	112	0	0	0	0
Red pine	30	0	0	0	0	0	0	0	275	86	0	0	0
Jack pine	8	0	0	0	23	9	0	0	0	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	17	0	0	0	0	30	29	0	0	0	0	0	0
Tamarack	14	0	0	0	60	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	89	0	0	0	119	39	29	0	387	86	0	0	0
Hardwoods:													
Select white oaks	22	0	0	0	27	17	40	0	0	0	0	0	0
Select red oaks	94	0	0	0	11	31	117	342	208	351	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	4	0	0	0	0	0	0	0	47	0	0	0	0
Soft maple	24	0	0	0	0	43	34	0	21	0	0	0	0
Ash	34	0	0	0	17	79	18	0	0	0	0	0	0
Balsam poplar	3	0	0	0	0	0	13	0	0	0	0	0	0
Paper birch	494	0	0	0	323	627	569	261	181	905	0	0	0
Bigtooth aspen	25	0	0	0	0	10	0	0	0	462	0	0	0
Quaking aspen	159	0	0	0	115	158	279	0	127	0	0	0	0
Basswood	28	0	0	0	28	0	48	0	103	0	0	0	0
Elm	50	0	0	0	94	38	52	49	0	0	0	0	0
Select hardwoods	3	0	0	0	0	0	0	53	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	940	0	0	0	615	1,003	1,170	705	687	1,719	0	0	0
Total all species	1,029	0	0	0	734	1,042	1,199	705	1,074	1,804	0	0	0
Number of plots	21	0	0	0	5	7	5	1	2	1	0	0	0
Standard error ^{3/}	83	0	0	0	64	159	152	R	3	R	0	0	0
Average basal area	89	0	0	0	73	86	107	82	94	98	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.

^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 188.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Central Hardwood Unit, Minnesota, 1977^{1/}

Paper birch forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	13	0	0	0	15	0	16	0	108	0	0	0	0
Red pine	11	0	0	0	0	0	0	0	137	29	0	0	0
Jack pine	4	0	0	0	9	4	0	0	17	0	0	0	0
White spruce	1	0	0	0	0	0	5	0	0	0	0	0	0
Black spruce	1	0	0	0	0	3	0	0	0	0	0	0	0
Balsam fir	10	0	0	0	3	18	30	0	0	0	0	0	0
Tamarack	9	0	14	0	30	8	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	2	0	0	0	0	0	12	0	0	0	0	0	0
Total	52	0	14	0	57	32	64	0	263	29	0	0	0
Hardwoods:													
Select white oaks	30	0	0	25	15	19	20	19	62	223	0	0	0
Select red oaks	83	101	18	12	69	33	106	347	117	169	0	108	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	8	0	0	0	0	0	9	113	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	2	0	0	0	0	0	0	0	23	0	0	0	0
Soft maple	14	0	15	0	0	38	17	0	11	0	0	0	0
Ash	17	0	0	0	9	48	18	0	0	0	0	0	0
Balsam poplar	5	0	0	23	0	8	6	0	0	0	0	0	0
Paper birch	409	108	56	130	368	663	522	569	105	430	0	86	0
Bigtooth aspen	15	0	0	64	0	5	6	0	0	154	0	0	0
Quaking aspen	100	0	0	55	95	103	190	157	131	0	0	0	0
Basswood	16	0	0	0	24	0	24	0	52	64	0	0	0
Elm	55	0	26	42	57	116	35	65	0	0	0	0	0
Select hardwoods	3	0	0	0	10	0	0	18	0	0	0	0	0
Other hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	756	209	114	352	647	1,033	953	1,288	500	1,041	0	194	0
Total all species	809	209	128	352	704	1,065	1,017	1,288	763	1,069	0	194	0
Number of plots	57	1	5	4	12	14	10	3	4	3	0	1	0
Standard error ^{3/}	74	R	57	55	111	175	134	380	218	384	0	R	0
Average basal area	75	19	37	59	68	87	95	91	73	84	0	23	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 189.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Prairie Unit, Minnesota, 1977^{1/}

Oak-hickory forest type - Site index class 0-50

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	0	0	0	0	0	0	0	0	0	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	11	0	0	0	0	0	0	0	0	0	47	0	0
Total	11	0	0	0	0	0	0	0	0	0	47	0	0
Hardwoods:													
Select white oaks	603	176	0	0	0	449	142	283	919	804	642	740	0
Select red oaks	60	0	0	0	0	18	510	348	13	0	4	0	0
Other red oaks	3	0	0	0	0	0	0	0	0	0	13	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	42	0	0	0	0	0	0	0	17	107	48	0	0
Balsam poplar	4	15	0	0	0	0	0	0	28	0	0	0	0
Paper birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	40	13	0	0	0	58	286	94	39	23	15	0	0
Basswood	19	0	0	0	0	76	0	0	0	30	6	46	0
Elm	31	0	0	0	0	36	0	26	0	66	32	0	0
Select hardwoods	15	0	0	0	0	0	33	0	0	16	40	0	0
Other hardwoods	14	0	0	0	0	0	0	16	0	35	11	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	830	204	0	0	0	637	971	767	1,016	1,081	812	785	0
Total all species	841	204	0	0	0	637	971	767	1,016	1,081	859	785	0
Number of plots	34	2	1	0	0	3	1	4	4	9	8	2	0
Standard error ^{3/}	82	73	R	0	0	94	R	266	300	187	103	270	0
Average basal area	94	36	19	0	0	104	116	95	118	103	89	87	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.Prairie Unit
Oak-hickory
Site Index 0-50

Table 190.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Prairie Unit, Minnesota 1977^{1/}Prairie Unit
Oak-hickory
Site Index 51-60

Oak-hickory forest type - Site index class 51-60

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	0	0	0	0	0	0	0	0	0	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Hardwoods:													
Select white oaks	295	0	0	0	88	795	0	475	171	0	0	0	0
Select red oaks	226	0	0	0	602	0	451	58	404	0	0	0	0
Other red oaks	11	0	0	0	0	0	0	34	0	0	0	0	0
Hickory	19	0	0	0	0	0	0	56	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	7	63	0	0	0	0	0	0	0	0	0	0	0
Balsam poplar	5	0	0	0	0	0	0	16	0	0	0	0	0
Paper birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	129	0	0	0	902	0	261	0	0	0	0	0	0
Basswood	84	0	0	0	0	0	0	0	376	0	0	0	0
Elm	56	0	0	0	0	0	0	0	250	0	0	0	0
Select hardwoods	21	0	0	0	0	143	0	14	0	0	0	0	0
Other hardwoods	10	0	0	0	0	0	0	0	47	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	862	63	0	0	1,592	938	713	653	1,248	0	0	0	0
Total all species	862	63	0	0	1,592	938	713	653	1,248	0	0	0	0
Number of plots	9	1	0	0	1	1	1	3	2	0	0	0	0
Standard error ^{3/}	222	R	0	0	R	R	R	162	942	0	0	0	0
Average basal area	82	45	0	0	165	82	68	72	79	0	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 191.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Prairie Unit, Minnesota, 1977^{1/}

Oak-hickory forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	0	0	0	0	0	0	0	0	0	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	10	0	0	0	0	0	0	11	0	0	47	0	0
Total	10	0	0	0	0	0	0	11	0	0	47	0	0
Hardwoods:													
Select white oaks	498	88	0	0	88	536	71	329	574	740	642	740	0
Select red oaks	127	54	0	0	602	13	481	202	188	120	4	0	0
Other red oaks	4	0	0	0	0	0	0	13	0	0	13	0	0
Hickory	4	0	0	0	0	0	0	21	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	1	0	0	0	0	0	0	0	9	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	31	16	0	0	0	0	0	0	10	96	48	0	0
Balsam poplar	4	7	0	0	0	0	0	6	16	0	0	0	0
Paper birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	55	7	0	0	902	44	274	58	23	20	15	0	0
Basswood	44	86	0	0	0	57	0	0	155	27	6	46	0
Elm	44	0	0	0	0	27	0	42	107	60	32	0	0
Select hardwoods	15	0	0	0	0	36	17	5	0	14	40	0	0
Other hardwoods	12	0	0	0	0	0	0	8	13	31	11	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	839	258	0	0	1,592	712	842	684	1,094	1,109	812	785	0
Total all species	849	258	0	0	1,592	712	842	695	1,094	1,109	859	785	0
Number of plots	47	4	1	0	1	4	2	8	7	10	8	2	0
Standard error ^{3/}	73	110	R	0	R	100	129	138	264	170	103	270	0
Average basal area	90	42	19	0	165	98	92	90	100	102	89	87	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 192.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Prairie Unit, Minnesota, 1977^{1/}

Elm-ash-cottonwood forest type - Site index class 0-50

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	0	0	0	0	0	0	0	0	0	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Hardwoods:													
Select white oaks	8	0	0	0	0	0	22	19	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	129	0	0	0	204	0	381	106	48	140	0	0	0
Balsam poplar	19	0	0	37	0	0	43	21	0	59	0	0	0
Paper birch	34	0	0	0	0	0	0	40	262	60	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	33	0	0	0	0	164	26	0	0	43	0	0	0
Basswood	11	0	0	0	70	0	0	0	0	0	0	0	0
Elm	129	0	0	0	104	0	288	177	177	184	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	314	0	0	28	11	367	47	690	0	0	1,132	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	675	0	0	65	390	530	808	1,051	486	443	1,176	0	0
Total all species	675	0	0	65	390	530	808	1,051	486	443	1,176	0	0
Number of plots	13	0	0	1	2	2	2	3	1	1	1	0	0
Standard error ^{3/}	107	0	0	R	45	111	291	182	R	R	R	0	0
Average basal area	94	0	0	15	66	107	113	109	75	86	146	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.

^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 193.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Prairie Unit, Minnesota, 19771/

Elm-ash-cottonwood forest type - Site index class 51-60

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	0	0	0	0	0	0	0	0	0	0	0	0	0
Tamarack	7	71	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	7	71	0	0	0	0	0	0	0	0	0	0	0
Hardwoods:													
Select white oaks	28	0	0	0	0	0	0	0	277	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	54	0	0	0	0	0	0	0	0	0	0	541	0
Ash	15	62	0	0	0	0	29	0	0	0	0	0	0
Balsam poplar	6	0	0	0	0	60	0	0	0	0	0	0	0
Paper birch	7	65	0	0	0	0	0	0	0	0	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	221	0	0	334	0	0	144	0	239	0	392	420	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	276	0	0	479	0	391	370	0	211	0	194	178	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	606	128	0	813	0	451	543	0	727	0	586	1,139	0
Total all species	613	199	0	813	0	451	543	0	727	0	586	1,139	0
Number of plots	10	1	0	1	0	1	3	0	1	0	2	1	0
Standard error ^{3/}	98	R	0	R	0	R	132	0	R	0	323	R	0
Average basal area	75	23	0	120	0	56	90	0	75	0	54	101	0

1/ Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.

2/ Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

3/ R indicates that there was an insufficient number of plots to compute the standard error.

Prairie Unit
Elm-ash-cottonwood
Site Index 51-60

Table 194.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Prairie Unit, Minnesota, 1977^{1/}

Elm-ash-cottonwood forest type - Site index class 61-70

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	0	0	0	0	0	0	0	0	0	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Hardwoods:													
Select white oaks	13	0	0	0	0	25	0	0	0	0	0	0	55
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	105	0	0	138	191	0	84	129	0	0	311	0	0
Balsam poplar	69	0	0	572	0	24	0	51	0	0	0	0	0
Paper birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	51	0	0	0	0	169	0	0	0	0	0	0	0
Basswood	21	0	0	0	0	0	0	80	0	0	0	0	128
Elm	103	0	0	0	50	134	57	0	0	0	0	0	469
Select hardwoods	17	0	0	0	0	14	124	0	0	0	0	0	0
Other hardwoods	615	0	0	303	971	494	732	512	0	0	913	0	270
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	993	0	0	1,012	1,212	860	997	773	0	0	1,224	0	921
Total all species	993	0	0	1,012	1,212	860	997	773	0	0	1,224	0	921
Number of plots	10	0	0	1	2	3	1	1	0	0	1	0	1
Standard error ^{3/}	96	0	0	R	392	213	R	R	0	0	R	0	R
Average basal area	100	0	0	112	132	80	90	79	0	0	105	0	109

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.

^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 195.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Prairie Unit, Minnesota, 1977^{1/}

Elm-ash-cottonwood forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	0	0	0	0	0	0	0	0	0	0	0	0	0
Tamarack	2	71	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	2	71	0	0	0	0	0	0	0	0	0	0	0
Hardwoods:													
Select white oaks	16	0	0	0	0	11	16	11	139	0	0	0	55
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	49	0	0	0	0	129	45	0	0	0	0	541	0
Ash	81	62	0	46	198	0	132	89	24	140	78	0	0
Balsam poplar	35	0	0	203	0	19	47	22	0	59	0	0	0
Paper birch	14	65	0	0	0	0	0	24	131	60	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	25	0	0	0	0	119	7	0	0	0	11	0	0
Basswood	12	0	0	0	35	0	12	16	0	0	0	0	128
Elm	133	0	0	111	77	58	133	106	208	184	196	420	469
Select hardwoods	6	0	0	0	0	6	23	0	0	0	0	0	0
Other hardwoods	436	0	0	270	491	661	320	616	105	0	608	178	270
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	807	128	0	630	801	1,003	736	885	607	443	893	1,139	921
Total all species	808	199	0	630	801	1,003	736	885	607	443	893	1,139	921
Number of plots	37	1	0	3	4	7	8	5	2	1	4	1	1
Standard error ^{3/}	83	R	0	288	287	339	106	149	120	R	221	R	R
Average basal area	90	23	0	82	99	95	95	88	75	86	90	101	109

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 196.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Prairie Unit, Minnesota, 1977^{1/}

Maple-basswood forest type - Site index class 0-50

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	0	0	0	0	0	0	0	0	0	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Hardwoods:													
Select white oaks	109	0	0	26	0	0	0	164	225	143	114	0	0
Select red oaks	48	0	0	0	0	0	0	193	20	0	58	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	58	0	0	0	0	0	0	327	0	0	0	0	0
Soft maple	3	0	0	0	0	0	0	0	0	0	18	0	0
Ash	131	0	31	0	0	348	0	119	110	297	76	0	0
Balsam poplar	9	0	0	0	0	24	0	0	33	0	0	0	0
Paper birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	15	0	0	128	0	0	0	0	0	0	0	0	0
Basswood	44	0	0	0	0	199	0	116	0	0	0	0	0
Elm	306	44	76	198	0	284	0	207	452	105	641	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	23	0	0	0	0	55	0	10	11	16	65	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	745	44	107	352	0	910	0	1,135	850	560	972	0	0
Total all species	745	44	107	352	0	910	0	1,135	850	560	972	0	0
Number of plots	17	1	1	2	0	2	0	3	3	2	3	0	0
Standard error ^{3/}	133	R	R	77	0	97	0	574	93	33	358	0	0
Average basal area	88	23	82	64	0	118	0	94	101	81	94	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.

^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 197.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Prairie Unit, Minnesota, 1977^{1/}

Maple-basswood forest type - Site index class 51-60

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	0	0	0	0	0	0	0	0	0	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Hardwoods:													
Select white oaks	159	0	0	0	54	0	151	182	234	89	377	60	0
Select red oaks	87	0	0	0	0	0	56	111	0	88	0	221	0
Other red oaks	2	0	0	0	0	0	0	0	0	21	0	0	0
Hickory	3	0	0	0	0	0	0	0	0	0	0	18	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	98	0	0	0	0	0	197	60	99	62	0	85	0
Soft maple	17	0	0	0	109	0	0	0	0	0	0	71	0
Ash	85	0	0	0	181	0	27	106	72	72	215	85	0
Balsam poplar	0	0	0	0	0	0	0	0	0	0	0	0	0
Paper birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	31	0	0	0	245	0	49	0	12	0	120	0	0
Basswood	337	0	0	0	0	0	272	247	381	451	143	577	0
Elm	297	0	0	0	131	0	169	391	259	151	122	583	0
Select hardwoods	4	0	0	0	0	0	18	0	0	0	0	0	0
Other hardwoods	36	0	0	0	38	0	115	5	0	12	0	21	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,156	0	0	0	759	0	1,054	1,102	1,057	945	977	1,720	0
Total all species	1,156	0	0	0	759	0	1,054	1,102	1,057	945	977	1,720	0
Number of plots	28	0	0	0	1	0	7	6	4	3	2	5	0
Standard error ^{3/}	96	0	0	0	R	0	181	174	70	249	342	317	0
Average basal area	102	0	0	0	120	0	96	98	101	86	100	120	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 198.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Prairie Unit, Minnesota, 1977^{1/}

Maple-basswood forest type - Site index class 61-70

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	0	0	0	0	0	0	0	0	0	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	3	0	0	0	0	0	17	0	0	0	0	0	0
Total	3	0	0	0	0	0	17	0	0	0	0	0	0
Hardwoods:													
Select white oaks	82	0	0	0	0	157	137	158	14	67	0	0	0
Select red oaks	57	0	115	0	0	0	25	64	182	0	0	0	79
Other red oaks	8	0	206	0	0	0	0	0	0	0	0	0	0
Hickory	1	0	0	0	0	0	0	3	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	74	0	0	0	0	0	60	92	187	0	0	0	241
Soft maple	3	0	0	0	0	0	0	0	11	13	0	0	0
Ash	94	0	0	0	0	0	151	126	146	34	151	0	0
Balsam poplar	12	0	0	0	0	292	0	0	0	0	0	0	0
Paper birch	11	0	0	0	0	0	0	0	18	68	0	0	0
Bigtooth aspen	2	0	41	0	0	0	0	0	0	0	0	0	0
Quaking aspen	17	0	0	0	0	0	83	0	0	0	0	0	0
Basswood	174	0	63	0	0	0	223	97	327	349	0	117	0
Elm	489	0	73	283	0	576	183	457	386	699	1,528	989	480
Select hardwoods	13	0	0	0	0	0	0	45	0	20	0	0	0
Other hardwoods	85	0	28	0	0	227	31	106	139	140	67	22	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,121	0	526	283	0	1,252	894	1,148	1,410	1,389	1,746	1,128	800
Total all species	1,124	0	526	283	0	1,252	911	1,148	1,410	1,389	1,746	1,128	800
Number of plots	25	0	1	1	0	1	5	6	4	3	1	2	1
Standard error ^{3/}	86	0	R	R	0	R	227	112	78	317	R	162	R
Average basal area	93	0	79	30	0	154	82	93	110	101	101	79	101

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 199.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Prairie Unit, Minnesota, 1977^{1/}

Maple-basswood forest type - Site index class 71-80

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	0	0	0	0	0	0	0	0	0	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Hardwoods:													
Select white oaks	153	0	45	0	0	0	514	150	28	0	695	0	0
Select red oaks	22	0	0	0	0	0	0	0	89	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	53	0	28	0	0	0	0	0	192	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	159	0	30	127	0	427	124	141	194	0	163	0	0
Balsam poplar	0	0	0	0	0	0	0	0	0	0	0	0	0
Paper birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	25	0	0	302	0	0	0	0	0	0	0	0	0
Basswood	307	0	0	0	0	0	89	799	300	0	301	0	0
Elm	454	0	140	231	0	563	259	584	612	0	528	0	0
Select hardwoods	5	0	0	0	0	0	0	21	0	0	0	0	0
Other hardwoods	58	0	52	111	0	207	0	90	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,236	0	295	771	0	1,197	986	1,785	1,414	0	1,687	0	0
Total all species	1,236	0	295	771	0	1,197	986	1,785	1,414	0	1,687	0	0
Number of plots	12	0	2	1	0	1	1	3	3	0	1	0	0
Standard error ^{3/}	198	0	145	R	0	R	R	455	331	0	R	0	0
Average basal area	90	0	64	41	0	82	79	106	86	0	169	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.Prairie Unit
Maple-basswood
Site Index 71-80

Table 200.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Prairie Unit, Minnesota, 1977^{1/}Prairie Unit
Maple-basswood
Site Index All Classes

Maple-basswood forest type - All site index classes

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	0	0	0	0	0	0	0	0	0	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	1	0	0	0	0	0	7	0	0	0	0	0	0
Total	1	0	0	0	0	0	7	0	0	0	0	0	0
Hardwoods:													
Select white oaks	123	0	22	13	54	39	174	166	117	94	256	43	0
Select red oaks	60	0	29	0	0	0	40	90	70	33	25	158	79
Other red oaks	3	0	52	0	0	0	0	0	0	8	0	0	0
Hickory	1	0	0	0	0	0	0	1	0	0	0	13	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	77	0	14	0	0	0	129	105	129	23	0	61	241
Soft maple	7	0	0	0	109	0	0	0	3	5	8	50	0
Ash	107	0	23	32	181	281	82	121	119	114	139	60	0
Balsam poplar	5	0	0	0	0	85	0	0	7	0	0	0	0
Paper birch	3	0	0	0	0	0	0	0	5	25	0	0	0
Bigtooth aspen	1	0	10	0	0	0	0	0	0	0	0	0	0
Quaking aspen	22	0	0	140	245	0	58	0	3	0	34	0	0
Basswood	222	0	16	0	0	100	239	267	262	300	84	446	0
Elm	378	44	107	228	131	427	181	414	398	345	603	699	480
Select hardwoods	6	0	0	0	0	0	9	19	0	7	0	0	0
Other hardwoods	51	0	33	28	38	136	74	54	39	61	37	21	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1,066	44	305	439	759	1,067	987	1,237	1,151	1,016	1,186	1,551	800
Total all species	1,067	44	305	439	759	1,067	994	1,237	1,151	1,016	1,186	1,551	800
Number of plots	83	1	4	4	1	4	13	18	15	8	7	7	1
Standard error ^{3/}	60	R	104	116	R	100	126	135	96	181	207	247	R
Average basal area	94	23	72	50	120	118	90	97	98	91	107	108	101

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 201.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Prairie Unit, Minnesota, 1977^{1/}

Aspen forest type - Site index class 0-50

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	1	0	0	0	0	0	9	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	0	0	0	0	0	0	0	0	0	0	0	0	0
Tamarack	3	0	0	0	0	0	23	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	4	0	0	0	0	0	32	0	0	0	0	0	0
Hardwoods:													
Select white oaks	32	7	8	0	0	11	68	98	58	369	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	7	5	0	0	0	0	0	0	267	0	0	0	0
Balsam poplar	38	11	16	0	33	101	94	12	0	0	0	0	0
Paper birch	3	0	0	0	0	0	0	0	148	0	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	224	72	172	132	227	420	360	286	463	40	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	2	0	0	0	0	0	0	0	0	101	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	308	94	196	132	260	532	523	396	936	510	0	0	0
Total all species	311	94	196	132	260	532	554	396	936	510	0	0	0
Number of plots	44	13	9	1	2	8	5	4	1	1	0	0	0
Standard error ^{3/}	45	33	36	R	42	146	146	61	R	R	0	0	0
Average basal area	53	29	47	38	55	64	80	67	116	101	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.Prairie Unit
Aspen
Site Index 0-50

Table 202.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Prairie Unit, Minnesota, 1977^{1/}Prairie Unit
Aspen
Site Index 51-60

Aspen forest type - Site index class 51-60

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	3	0	9	0	5	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	2	0	8	0	0	0	0	0	0	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	5	0	17	0	5	0	0	0	0	0	0	0	0
Hardwoods:													
Select white oaks	26	4	23	32	18	23	56	231	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	8	0	4	0	4	0	0	234	0	0	0	0	0
Balsam poplar	57	36	21	21	50	150	142	154	0	0	0	0	0
Paper birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	279	161	187	90	387	553	286	687	0	0	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	6	10	0	0	0	20	0	21	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	7	0	4	0	25	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	382	212	239	142	485	746	483	1,327	0	0	0	0	0
Total all species	387	212	256	142	489	746	483	1,327	0	0	0	0	0
Number of plots	73	19	16	7	16	9	4	2	0	0	0	0	0
Standard error	44	56	49	29	95	118	21	588	0	0	0	0	0
Average basal area	56	36	52	39	69	78	59	119	0	0	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

Table 203.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Prairie Unit, Minnesota, 1977^{1/}

Aspen forest type - Site index class 61-70

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Red pine	9	0	0	0	0	37	0	0	0	0	0	0	0
Jack pine	5	0	0	0	0	22	0	0	0	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	0	0	0	0	0	0	0	0	0	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	14	0	0	0	0	59	0	0	0	0	0	0	0
Hardwoods:													
Select white oaks	99	37	0	39	119	169	234	0	0	0	0	0	0
Select red oaks	6	0	0	0	22	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	8	8	0	0	17	4	0	0	0	0	0	0	0
Balsam poplar	44	16	0	58	26	88	95	0	0	0	0	0	0
Paper birch	9	21	0	0	0	15	0	0	0	0	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	428	174	217	445	547	564	586	0	0	0	0	0	0
Basswood	6	0	0	0	15	6	0	0	0	0	0	0	0
Elm	8	13	0	0	7	6	29	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	7	0	0	16	2	18	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	613	268	217	558	754	870	945	0	0	0	0	0	0
Total all species	627	268	217	558	754	929	945	0	0	0	0	0	0
Number of plots	42	10	3	5	12	10	2	0	0	0	0	0	0
Standard error	63	54	36	36	115	135	26	0	0	0	0	0	0
Average basal area	69	46	53	59	75	89	105	0	0	0	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.Prairie Unit
Aspen
Site Index 61-70

Table 204.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Prairie Unit, Minnesota, 1977^{1/}

Aspen forest type - Site index class 71-80

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	0	0	0	0	0	0	0	0	0	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Hardwoods:													
Select white oaks	44	0	0	55	142	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	49	0	0	0	103	71	80	0	0	0	0	0	0
Balsam poplar	99	0	25	127	87	133	209	0	0	0	0	0	0
Paper birch	26	0	0	0	0	76	81	0	0	0	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	745	0	230	702	874	1,131	538	0	0	0	0	0	0
Basswood	3	0	0	0	0	10	0	0	0	0	0	0	0
Elm	13	0	12	0	15	22	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	2	0	0	0	0	8	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	981	0	267	885	1,221	1,451	909	0	0	0	0	0	0
Total all species	981	0	267	885	1,221	1,451	909	0	0	0	0	0	0
Number of plots	21	0	5	4	5	6	1	0	0	0	0	0	0
Standard error ^{3/}	124	0	71	187	201	180	R	0	0	0	0	0	0
Average basal area	87	0	54	92	93	107	79	0	0	0	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.

^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 205.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Prairie Unit, Minnesota, 1977^{1/}

Aspen forest type - All site index classes
(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Red pine	2	0	0	0	0	11	0	0	0	0	0	0	0
Jack pine	1	0	0	0	0	7	0	0	0	0	0	0	0
White spruce	1	0	4	0	2	0	4	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	1	0	4	0	0	0	0	0	0	0	0	0	0
Tamarack	1	0	0	0	0	0	9	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	6	0	8	0	2	18	13	0	0	0	0	0	0
Hardwoods:													
Select white oaks	46	13	14	38	69	60	86	142	58	369	0	0	0
Select red oaks	1	0	0	0	7	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	13	3	2	0	22	14	7	78	267	0	0	0	0
Balsam poplar	54	24	18	55	46	116	120	59	0	0	0	0	0
Paper birch	6	5	0	0	0	18	7	0	148	0	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	355	137	192	341	502	629	388	420	463	40	0	0	0
Basswood	2	0	0	0	5	3	0	0	0	0	0	0	0
Elm	6	7	2	0	5	11	5	7	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	5	0	2	5	12	7	0	0	0	101	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	488	189	230	439	670	860	612	706	936	510	0	0	0
Total all species	494	189	238	439	672	877	625	706	936	510	0	0	0
Number of plots	180	42	33	17	35	33	12	6	1	1	0	0	0
Standard error ^{3/}	33	31	27	87	78	87	79	251	R	R	0	0	0
Average basal area	62	36	51	57	74	83	77	84	116	101	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.

^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.

^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Prairie Unit
Aspen
Site Index All Classes

Table 206.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Prairie Unit, Minnesota, 1977^{1/}Prairie Unit
Balsam Poplar
Site Index 0-50

Balsam poplar forest type - Site index class 0-50

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	0	0	0	0	0	0	0	0	0	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Hardwoods:													
Select white oaks	4	0	0	0	12	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam poplar	253	386	63	0	300	353	0	0	0	0	0	0	0
Paper birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	41	0	0	0	73	65	0	0	0	0	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	6	0	22	0	0	0	0	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	305	386	84	0	385	418	0	0	0	0	0	0	0
Total all species	305	386	84	0	385	418	0	0	0	0	0	0	0
Number of plots	10	1	3	0	3	3	0	0	0	0	0	0	0
Standard error ^{3/}	81	R	55	0	200	144	0	0	0	0	0	0	0
Average basal area	41	41	24	0	45	52	0	0	0	0	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Table 207.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Prairie Unit, Minnesota, 1977^{1/}

Balsam poplar forest type - Site index class 51-60

(In cubic feet per acre)

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	0	0	0	0	0	0	0	0	0	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Hardwoods:													
Select white oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	55	0	0	0	0	220	0	0	0	0	0	0	0
Balsam poplar	298	208	0	0	192	580	218	0	0	0	0	0	0
Paper birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	48	46	0	0	72	50	0	0	0	0	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	46	0	0	0	105	0	158	0	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	9	0	0	0	17	0	37	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	456	254	0	0	386	850	412	0	0	0	0	0	0
Total all species	456	254	0	0	386	850	412	0	0	0	0	0	0
Number of plots	8	3	0	0	2	2	1	0	0	0	0	0	0
Standard error ^{3/}	105	118	0	0	53	202	R	0	0	0	0	0	0
Average basal area	54	34	0	0	68	73	49	0	0	0	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.Prairie Unit
Balsam Poplar
Site Index 51-60

Table 208.--Cubic foot volume per acre in growing-stock trees by species group and stand-age class, Prairie Unit, Minnesota, 1977^{1/}

Balsam poplar forest type - All site index classes

(In cubic feet per acre)

Prairie Unit
Balsam Poplar
Site Index All Classes

Species	Average ^{2/}	Stand-age class (years)											
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121+
Softwoods:													
White pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Jack pine	0	0	0	0	0	0	0	0	0	0	0	0	0
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Balsam fir	0	0	0	0	0	0	0	0	0	0	0	0	0
Tamarack	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern white-cedar	0	0	0	0	0	0	0	0	0	0	0	0	0
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Hardwoods:													
Select white oaks	2	0	0	0	6	0	0	0	0	0	0	0	0
Select red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Other red oaks	0	0	0	0	0	0	0	0	0	0	0	0	0
Hickory	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow birch	0	0	0	0	0	0	0	0	0	0	0	0	0
Hard maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Soft maple	0	0	0	0	0	0	0	0	0	0	0	0	0
Ash	25	0	0	55	0	88	0	0	0	0	0	0	0
Balsam poplar	308	253	63	247	310	444	218	779	0	0	0	0	0
Paper birch	3	0	0	28	0	0	0	0	0	0	0	0	0
Bigtooth aspen	0	0	0	0	0	0	0	0	0	0	0	0	0
Quaking aspen	53	34	0	0	78	59	0	268	0	0	0	0	0
Basswood	0	0	0	0	0	0	0	0	0	0	0	0	0
Elm	33	0	0	24	35	0	158	304	0	0	0	0	0
Select hardwoods	0	0	0	0	0	0	0	0	0	0	0	0	0
Other hardwoods	6	0	22	0	6	0	37	0	0	0	0	0	0
Noncommercial species	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	429	287	84	354	435	591	412	1,352	0	0	0	0	0
Total all species	429	287	84	354	435	591	412	1,352	0	0	0	0	0
Number of plots	22	4	3	2	6	5	1	1	0	0	0	0	0
Standard error ^{3/}	71	90	55	79	103	147	R	R	0	0	0	0	0
Average basal area	51	36	24	45	58	61	49	109	0	0	0	0	0

^{1/}Table may not add to totals due to rounding. Forest type definitions and species list are in the appendix.^{2/}Weighted average over all stand-age classes--the average volume per acre for all ages in the forest type and index range.^{3/}R indicates that there was an insufficient number of plots to compute the standard error.

Hahn, Jerold T., and Gerhard K. Raile.

1982. Empirical yield tables for Minnesota. U.S. Department of Agriculture Forest Service, General Technical Report NC-71, 212 p. U.S. Department of Agriculture Forest Service, North Central Forest Experiment Station, St. Paul, Minnesota.

Describes the tables derived from the 1977 Forest Survey of Minnesota and presents examples of how the tables can be used. These tables are broken down according to Minnesota's four Forest Survey Units, 14 forest types, and 5 site index classes. Presents 210 of the 350 possible tables that contained sufficient data to justify publication.

KEY WORDS: Inventory, volume, growth.